

Expanded Environmental Notification Project Narrative

A1/B2 Asset Condition Refurbishment Project - Massachusetts

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol,
and Sterling

September 12, 2022

Filed in Accordance with the Massachusetts Environmental Policy Act 301 CMR 11.00

Prepared for:

nationalgrid

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Prepared by:

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BSC PROJECT NUMBER 89620.66

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Glossary

115 kV:	115 kilovolts or 115,000 volts
1987 Manual:	USACE Wetland Delineation Manual, January 1987
69 kV:	69 kilovolts or 69,000 volts
A1/B2 ACR:	A1/B2 Asset Condition Refurbishment Project (“the Project”)
ACI:	American Concrete Institute
ACHP:	Advisory Council on Historic Preservation
ACSS:	Aluminum-conductor steel-supported
ANSI:	American National Standards Institute
AP:	Adaptation Pathways (<i>climate change</i>)
APE:	Area of Potential Effects (<i>cultural resources</i>)
ASCE:	American Society of Civil Engineers
BAY-DE:	Bayonet Deadend
Bank:	Inland Bank, as defined by the Massachusetts Wetlands Protection Act
BLSF:	Bordering Land Subject to Flooding, as defined by the Massachusetts Wetlands Protection Act
BMPs:	Best Management Practices
BSC:	BSC Group, Inc.
BIL:	Basic Insulation Level
Bundle (conductor):	Two or more wires joined together to operate as a single phase.
BVW:	Bordering Vegetated Wetlands
Cable:	A fully insulated conductor is usually installed underground but, in some circumstances, can be installed overhead.
CBO:	Community-based organization (<i>Environmental Justice</i>)
cf:	Cubic Feet
Circuit:	A system of conductors (three conductors or three bundles of conductors) through which an electric current is intended to flow, and which may be supported above ground by transmission structures or placed underground.
CMP:	Conservation Management Permit
CMR:	Commonwealth of Massachusetts Regulations
Commonwealth	The Commonwealth of Massachusetts
Conductor:	A metallic wire busbar, rod, tube or cable that serves as a path for electric current to flow.
Contingency:	An event, usually involving the loss of one or more elements, which affects the power system at least momentarily.
CVP:	Certified Vernal Pool
CWA:	Clean Water Act
cy:	Cubic yard
Demand:	The total amount of electric power required at any given time by an electric supplier’s customers.
DGA:	Designated Geographic Area, as defined by 301 CMR 11.02
DPU:	Department of Public Utilities
DCR:	Department of Conservation and Recreation
DFW:	Massachusetts Division of Fisheries and Wildlife
EEA:	Energy and Environmental Affairs

EFI:	Environmental Field Issue Guidelines: set of guidelines developed for all construction and maintenance projects
EFSB:	Energy Facilities Siting Board
EIR:	Environmental Impact Report, per MEPA regulations
EJ:	Environmental Justice
EF:	Electric Field. A field produced as a result of voltages applied to electrical conductors and equipment; usually measured in units kilovolts per meter.
Electric Transmission:	The facilities (≥ 69 kV) that transmit electrical energy from generating plants to substations.
EG-303NE:	National Grid Environmental Guidance Document
ENF:	Environmental Notification Form, per MEPA regulations
Environmental Monitor:	Inspects environmental conditions within the construction site, reviews the contractors' compliance with environmental permit conditions during the construction phase of a project, and makes recommendations for corrective actions to protect sensitive environmental resources proximate to a construction site.
EOEEA:	Massachusetts Executive office of Energy and Environmental Affairs
EPA:	United States Environmental Protection Agency
FEMA:	Federal Emergency Management Agency
GIS:	Geographic Information System
GHG:	Greenhouse Gas
Ground Wire:	Cable/wire used to connect wires and metallic structure parts to the earth. Sometimes used to describe the lightning shield wire.
Guy Wire:	A tensioned cable designed to add stability to utility poles; extends from a pole to a ground anchor.
H-frame Structure:	A wood or steel transmission line structure constructed of two upright poles with a horizontal cross-arm and diagonal bracings.
IEEE:	Institute of Electrical and Electronic Engineers
ILSF:	Isolated Land Subject to Flooding, as defined by the Massachusetts Wetlands Protection Act
ISO-NE:	Independent Service Operator - New England, Inc. The independent system operator of New England.
IVM:	Integrated Vegetation Management
kcm:	Thousand circular mils
kV:	Kilovolt. 1 kV equals 1,000 volts.
lf:	Linear Feet
Lines	A1/B2 Transmission Lines
LOD	Limit of Disturbance
Load:	Amount of power delivered upon demand at any point or points in the electric system. Load is created by the power demands of customers' equipment (residential, commercial, and industrial).
LUW:	Land Under Waterbodies and Waterways, as defined by the Massachusetts Wetlands Protection Act
MA:	Massachusetts
MACRIS:	Massachusetts Cultural Resources Information System (<i>cultural resources</i>)
MassDEP:	Massachusetts Department of Environmental Protection

MassDEP Handbook:	MassDEP’s Handbook on Delineating Bordering Vegetated Wetlands, March 1995
MassDOT:	Massachusetts Department of Transportation
MADPH EJ Tool:	Massachusetts Department of Health Environmental Justice Tool
MassGIS:	Massachusetts Geographical Information System
MBTA:	Massachusetts Bay Transportation Authority
MC-FRM:	Massachusetts Coast Flood Risk Model
MEPA:	Massachusetts Environmental Policy Act 301 CMR 11.00, as administered through EEA
MESA:	Massachusetts Endangered Species Act, as administered by NHESP
MHC:	Massachusetts Historical Commission
Monopole:	A single pole supporting overhead utility wire.
MVP:	Municipal Vulnerability Preparedness
NEP:	New England Power Company
NERC:	North American Electric Reliability Corporation
NESC:	National Electrical Safety Code
NH:	New Hampshire
NHESP:	Natural Heritage and Endangered Species Program
NHPA:	National Historic Preservation Act
NOAA:	National Oceanic and Atmospheric Administration
NPDES:	National Pollutant Discharge Elimination System
NRHP:	National Register of Historic Places
NWI:	National Wetlands Inventory
OH Line:	Overhead Line
OHWM:	Ordinary High-Water Mark
OOB:	Order of Conditions
OPGW:	Optical Primary Ground Wire
Order:	Governor Baker’s Executive Order 569 (Order) set forth specific objectives to build resilience and adapt to the impacts of climate change in the Commonwealth.
ORWs:	Outstanding Resource Waters. Designated in 314 CMR 4.00 as high-quality waters with socioeconomic, recreational, ecological and/or aesthetic values. Includes Class A Public Water Supplies and their tributaries, CVPs.
PCN:	Pre-Construction Notification
PEM:	Palustrine Emergent Wetlands, Persistent – wet meadows, marshes
PFO:	Palustrine Forested, Broad-leaved Deciduous/Needle-leaved Evergreen – forested wetlands
PSS:	Palustrine Scrub-Shrub Broad Leaved Deciduous Wetlands – woody deciduous wetlands
PUB1Fb:	Palustrine Unconsolidated Bottom Semi-Permanently Flooded Beaver
PVP:	Potential Vernal Pool
RA	Riverfront Area, as defined by the Massachusetts Wetlands Protection Act
RC:	Regional Coordination
Reconductor:	Replacement of existing conductors with new conductors, and any necessary structure reinforcements or replacements.
Reliability:	A system’s ability to provide power during emergencies (also known as “contingencies”).
Reinforcement:	Any of a number of approaches to improve the capacity of the transmission system, including rebuilding, reconductoring, uprating, conversion and conductor bundling methods.
	Resilient Massachusetts Action Team Climate Resilience Design Tool
RMAT Tool:	

ROW:	Right-of-way. Corridor of land within which a utility company holds legal rights necessary to build operate and maintain power lines.
sf:	square feet
Shield Wire:	Wire strung at the top of transmission lines intended to prevent lightning from striking transmission circuit conductors. Sometimes referred to as static wire or aerial ground wire. May contain glass fibers for communication use. See also “OPGW”.
SHPO:	State Historic Preservation Officer (cultural resources)
SHMCAP:	State Hazard Mitigation and Climate Adaptation Plan
SS:	Site Suitability
Steel Pole: Structure:	Transmission line structure consisting of tubular steel pole(s) with arms or other components to support insulators and conductors.
Substation:	A fenced-in yard containing switches, power transformers, line terminal structures, and other equipment enclosures and structures. Voltage change, adjustments of voltage, monitoring of circuits and other service functions take place in this installation.
SWCA:	SWCA Environmental Consultant
SWPPP:	Stormwater Pollution Prevention Plan
Terminal Structure:	Structure typically within a substation that ends a section of transmission line.
Transmission Line:	An electric power line operating at 69,000 or more volts.
USACE:	United States Army Corps of Engineers
USFWS:	United States Fish and Wildlife Service
USGS:	United States Geological Survey
VHB:	Vanessa Hangen Brustlin, Inc
VMP:	Five Year Vegetation Management Plan (2019-2023), as approved by the Massachusetts Department of Agriculture.
Voltage:	A measure of the electrical pressure that transmits electricity. Usually given as the line-to-line root-mean square magnitude for three-phase systems.
Voltage Collapse:	A condition where voltage drops to unacceptable levels and cascading interruptions of transmission system elements occur resulting in widespread blackouts.
VT:	Vermont
Watercourse:	Rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, public or private.
Wetland:	Land, including submerged land, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial or flood plain by the U.S. Department of Agriculture, Natural Resources Conservation Service. Wetlands include federally jurisdictional wetlands of the U.S. and navigable waters, freshwater wetlands or coastal resources regulated by a state or local regulatory authority. Jurisdictional wetlands are classified based on a combination of soil type, wetland plants, and hydrologic regime, or state-defined wetland types.
Wire:	See Conductor
WMA:	Wildlife Management Area
WPA	Wetlands Protection Act: G.L. c. 131, §40 and implementing regulations (310 CMR 10.00)
WQC:	Water Quality Certificate
(permit/consultation requirement table)	

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SEPTEMBER 12, 2022

Bethany A. Card, Secretary
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: **A1/B2 Asset Condition Refurbishment Project
Expanded Environmental Notification Form**

Dear Secretary Card,

On behalf of the New England Power Company (NEP), BSC Group, Inc. is pleased to submit this Expanded Environmental Notification Form (EENF) for various refurbishment activities and system improvements for 733 structures and the installation of six (6) new structures along approximately 54 circuit miles along the A1/B2 Lines which extend from Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling to Pratts Junction Substation in Sterling, Massachusetts (the "Project"). The proposed Project includes required maintenance and system improvements to mitigate potential risks of electrical failure and to provide reliable delivery of electrical service.

The Project site is an active utility Right-of-Way (ROW) and contains existing utility structures, historically used access routes, and managed vegetation areas along the A1/B2 main line and three (3) tap lines, the Athol Taps 1 and 2, Gardner Tap (Crystal Lake Tap) and the East Westminster Tap. The Project is consistent with existing facilities and activities. Project impacts are construction related and include permanent land alteration due to tree removal on the ROW, access road establishment and improvements, and installation of concrete caisson foundations as well as temporary impacts related to construction matting for access, work envelopes and pull pads. Permanent fill within Bordering Vegetated Wetlands and the FEMA 100-yr Floodplain is anticipated. The Project has been designed to avoid adverse impacts to the greatest extent practicable.

NEP is submitting this EENF because the Project requires several state agency actions and exceeds four (4) MEPA thresholds for an Environmental Impact Report (EIR) and several ENF thresholds. NEP respectfully requests that MEPA allow a Single EIR filing in accordance with 301 CMR 11.06(8).

The Project will improve transmission system infrastructure and comply with comprehensive regional plans for improving electric transmission reliability in New England. Benefits of the Project include the following:

- Increased resiliency of the overall transmission line due to improved foundations and more robust structures that are better suited to withstand strong winds and storm events.

- The new overhead lines will be thicker, which will allow more electricity to flow during times of high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change.
- The installation of Optical Primary Ground Wire (OPGW) will allow better communication between substations, resulting in improved response time during storm-related emergencies and outages, which will increase public safety.
- Reduce overall disturbance to adjacent landowners, wetland resource areas, and rare species habitat over time by planning for the future and reducing the likelihood of multiple repeat projects, thereby reducing environmental impacts, and reducing costs to NEP's customers.
- The replacement of the Lines will have the added benefit of allowing more renewable energy resources to connect into the system. Addressing the climate change crisis requires a major expansion of renewable energy and the infrastructure necessary to support and deliver that energy. NEP is actively taking steps to ensure that its system is ready to meet this critical challenge. Replacing infrastructure like the A1/B2 Lines helps to accomplish this goal. The replacement lines will have higher kilovolt ratings that will support higher volumes of currently active and forecasted renewable energy resources in this region. This longer-term view is supported by the recently shared initial results of the ISO-NE 2050 study, where an upgrade to 115 kV would be necessary based on the current study assumptions and long-term forecasts for the Commonwealth.

Please publish the Notice of Availability for this ENF in the September 16th Environmental Monitor to initiate the 30-day public review and comment period. Electronic copies have been distributed to public agencies and town officials in accordance with 301 CMR 11.16(2) (see Appendix B MEPA EENF Circulation List). The Public Notice of Environmental Review will be published in local newspapers on September 16, 2022 in accordance with 301 CMR 11.15(1).

Please do not hesitate to contact me at (617) 896-4519 or hgraf@bscgroup.com with any questions or comments.

Sincerely,

BSC Group, Inc.



Heidi Graf
Associate Project Manager

cc: Mike Tyrrell, NEP
EENF Circulation List (see Appendix B)

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Project Name: A1/B2 Asset Condition Refurbishment (ACR) Project		
Street Address: Existing overhead electric transmission right-of-way crossing multiple public ways		
Municipality: Warwick, Royalston, Winchendon, Gardner, Westminister, Fitchburg, Leominster, Athol, and Sterling		Watershed: Nashua, Millers, & Connecticut
Universal Transverse Mercator Coordinates:		Latitude: start: 42° 43' 29.1"N end: 42°28'19.4"N
UTM Easting	UTM Northing	Longitude: start: -72° 23' 52.4N end: -71°44'21.3"W
Start: 713043.97	4733532.97	
End: 274818.53	4705826.34	
Estimated commencement date: 2025		Estimated completion date: 2031
Project Type: Utility: Overhead Transmission Line		Status of project design: 50 % complete
Proponent: New England Power Company ("NEP")		
Street Address: 40 Sylvan Road		
Municipality: Waltham	State: MA	Zip Code: 02451
Name of Contact Person: Heidi Graf		
Firm/Agency: BSC Group, Inc.		Street Address: 1 Mercantile Street, Suite 610
Municipality: Worcester	State: MA	Zip Code: 01608
Phone: 617-896-4519	Fax:	E-mail: hgraf@bscgroup.com

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?

Yes No

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8)) Yes No

a Rollover EIR? (see 301 CMR 11.06(13)) Yes No

a Special Review Procedure? (see 301CMR 11.09) Yes No

a Waiver of mandatory EIR? (see 301 CMR 11.11) Yes No

a Phase I Waiver? (see 301 CMR 11.11) Yes No

(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?

This Project exceeds or potentially exceeds the following MEPA EIR and ENF thresholds:

MEPA EIR Threshold
EIR: Land: <i>Direct alteration of 50 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices. (301 CMR 11.03(1)(a))</i>
EIR: Wetlands, Waterways and Tidelands: <i>Alteration of one or more acres of bordering vegetated wetlands (BVW). (301 CMR 11.03(3)(a)(1)(a))</i>
EIR: Wetlands, Waterways and Tidelands: <i>Alteration of ten or more acres of any other wetlands. (301 CMR 11.03(3)(a)(1)(b))</i>
EIR: Environmental Justice: <i>The Secretary shall require an EIR for any Project that is located within a Designated Geographic Area around an Environmental Justice Population. (301 CMR 11.06(7)(b))</i>
MEPA ENF Thresholds
ENF: Wetlands, Waterways and Tidelands: <i>Alteration of 500 or more linear feet of bank along a fish run or inland bank. (301 CMR 11.03(3)(b)(1)(b))</i>
ENF: Wetlands, Waterways and Tidelands: <i>Alteration of one half or more acres of any other wetlands. (301 CMR 11.03(3)(b)(1)(f))</i>
ENF: Rare Species: <i>Taking of an endangered or threatened species or species of special concern, provided that the Project site is two or more acres and includes an area mapped as a Priority Site of Rare Species Habitats and Exemplary Natural Communities. (301 CMR 11.03(2)(b)(2)).(Potential- consultation with NHESP ongoing.)</i>

Which State Agency Permits will the project require?

The following State Agency Permit or Approvals are anticipated:

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- *Massachusetts Department of Environmental Protection (“MassDEP”) Section 401 Water Quality Certificate and Variance;*
- *Natural Heritage and Endangered Species Program (“NHESP”) Conservation Management Permit (potential);*
- *Massachusetts Department of Transportation (“MassDOT”) Permit to Access State Highway/Non-Municipal Utility Permits for Crossing Over of State Roads with Utility Lines and Permanent Access Permit;*
- *Massachusetts Energy Facilities Siting Board (“EFSB”), G.L. c. 164 §69J Petition for Approval to Construct New Transmission Lines;*
- *Massachusetts Department of Public Utilities (“DPU”), G.L. c. 164, §72 Petition for Determination of Public Necessity and Convenience; and G.L. c. 40A, §3 Petition for Zoning Exemption;*

Please refer to Project Narrative, Section 1, Table 3: Permit/Consultation Requirements

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

Not applicable: no financial assistance or land transfer will be associated with this Project.

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Summary of Project Size & Environmental Impacts	<i>Existing</i>	Change	Total
LAND			
Total site acreage	~1047 +/-		
New acres of land altered		~216+/- ¹	
Acres of impervious area	41+/- ²	N/A	
Square feet of new bordering vegetated wetlands alteration		2,868,580 ³	
Square feet of new other wetland alteration ⁴		BLSF:95,593 ⁵ RA: 2,614,816 ⁶ Bank: 94,526 ⁷ LUW: 32,364 ⁸ Isolated Wetland:85,021 ⁹	
Acres of new non-water dependent use of tidelands or waterways		N/A	
STRUCTURES			
Gross square footage	N/A	N/A	N/A
Number of housing units	N/A	N/A	N/A
Maximum height (feet) ¹⁰	51	39-45	~90

1 Includes all new areas of disturbance for tree removal (164 acres) and construction of access roads (52 acres). See Sections 1.6.2, 1.6.3, 1.6.4 and Section 4 for more detail.

2 Includes paved areas and substations within Project ROW.

3 Bordering Vegetated Wetland includes approximately 1,896 sf of permanent fill due to concrete caissons; approximately 666,032 sf of wetland conversion due to tree removal; and approximately 2,200,651 sf of temporary construction matting impact during construction.

4 BLSF- Bordering Land Subject to Flooding; RA- Riverfront Area; Bank- Inland Bank. LUW- Land Under Water.

Note that impacts located within the limits of RFA overlap with impacts to BLSF, BVW and the 100-ft Buffer Zone. Therefore, the total impacts to the Project Site are not equal to the sum of the alterations.

5 BLSF includes approximately 632 sf of new concrete caissons; 81,022 sf of tree removals; and 13,939 sf of temporary construction matting. Overexcavation for work envelopes, pull pads and access, 293,924 sf not included in total as no loss in flood storage will occur.

6 RA includes approximately 3,479 sf of new concrete caissons; 1,177,862 sf for grading and retaining walls; 171,544 sf of new and/or re-establishment of access roads; 748,796 sf of tree removals; and 513,137 sf of temporary construction matting.

7 Bank includes approximately 26,572 sf of tree removals (overhead line clearance and Limit of Disturbance) and 67,954 sf of temporary construction matting. In most cases, construction mat crossing will span the Bank of rivers and stream; however, the potential for alteration has been accounted for in the review of MEPA Thresholds.

8 LUW includes approximately 158 sf of new concrete caissons on the Crystal Lake Tap Line and 32,206 sf of construction matting in open water where spanning is not feasible.

9 Isolated wetland impacts includes approximately 73,181 sf of temporary construction matting; and 11,840 sf of permanent impacts (79 sf of fill for caisson foundation and 11,761 sf of forested wetland conversion to PSS.)

10 Mainline structure heights are approximately 51-ft and tap line structures are approximately 45-ft. Replacement and new structures for the mainline and tap lines will be approximately 90-ft.

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TRANSPORTATION			
Vehicle trips per day	N/A	N/A	N/A
Parking spaces	N/A	N/A	N/A
WASTEWATER			
Water Use (Gallons per day)	N/A	N/A	N/A
Water withdrawal (GPD)	N/A	N/A	N/A
Wastewater generation/treatment (GPD)	N/A	N/A	N/A
Length of water mains (miles)	N/A	N/A	N/A
Length of sewer mains (miles)	N/A	N/A	N/A
Has this project been filed with MEPA before? <input type="checkbox"/> Yes (EEA # _____) <input checked="" type="checkbox"/> No			
Has any project on this site been filed with MEPA before? <input checked="" type="checkbox"/> Yes (EEA # <u>15432</u>) <input type="checkbox"/> No			

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GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION:

Describe the existing conditions and land uses on the project site: _____

A detailed description of the existing conditions and land uses on the project site is provided in the Project Narrative (Section 1: Project Overview and Summary and Section 3: Land Use)

Describe the proposed project and its programmatic and physical elements: _

NOTE: The project description should summarize both the project’s direct and indirect impacts (including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.

Within MA, the A1/B2 ACR Project (or “the Project”) will be located within existing electric transmission ROW containing the existing 69 kV A1 and B2 Lines, also referred to as “the mainline” and three (3) intersecting tap lines. The A1/B2 mainline extends from the Massachusetts border in Warwick through Royalston, Winchendon, Gardner, Westminster, Fitchburg, and Leominster to the Pratts Junction #255 Substation in Sterling. The tap lines consist of the existing Athol Taps 1 and 2 in Athol and Royalston, the existing Crystal Lake Tap in Gardener, and the existing East Westminster Tap in Westminster. The Project is part of a larger refurbishment effort that continues through NH and terminates at the Vernon #12 Switchyard located in Vernon, Vermont.

Please refer to the Locus Map in Appendix A: Figures for more information.

Project Need: The A1/B2 Lines were originally constructed in 1909 and the original lattice structures remain. The Lines were reconducted in the 1920s and were reinsulated in 2004. Structures and wires are in need of replacement due to asset condition and aging infrastructure. In addition, the access conditions vary considerably throughout the ROW. Existing access is present in some areas, but in others, the historic access route is in need of significant repair and does not meet NEP’s standard to safely support specialized equipment. As such, the Project’s primary objective is to complete required system improvements that will address poor asset condition, mitigate potential risks of electrical failure, and to provide long-term reliable delivery of electrical service and maintenance of the lines. As part of the proposed refurbishment, fiber optic ground wire will be used to replace the existing shield wire to provide high speed communications between substations.

Secondarily, the initial results of the Independent System Operator – New England (“ISO-NE”) 2050 Transmission Study (“Study”) support upgrading the line to 115 kV. Based on current Study assumptions and forecasts, renewable energy connections and customer needs will ultimately require the system operate at the higher voltage at some point in the future. In an effort to reduce the impacts of a second large-scale refurbishment on the environment, the community and its customers, NEP proposes to “future proof” the A1/B2 mainline and tap lines as part of this Project constructing lines with 115 kV capacity but operating the lines at 69 kV until the additional capacity is needed.

Project Description:

The Project includes various refurbishment activities and system improvements for 711 structures and the installation of six (6) new vertical jumper switch structures along the mainline and tap lines in MA. Activities will occur within an existing ROW and all efforts will be made to minimize the need for construction activities outside the easement.

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Along the A1/B2 ROW and the Athol, Crystal Lake, and East Westminster Tap Lines, the 711 proposed structure replacements will entail removing the existing structure and installing a replacement structure in an adjacent location. Based on the current Project design, it is assumed 305 of the replacement structures will be on concrete caisson foundations, due to the tension on the structure. The remaining 406 poles will be directly embedded into the ground and will not require caisson foundations.

The Project will be reconducted with 795 Aluminum-conductor steel-supported conductor (“ACSS”) and existing shield wire will be replaced with two (2) Optical Primary Ground Wires (“OPGW”). In certain situations where a replacement structure is proposed 25-ft or more from the existing structure, a temporary structure will be installed to facilitate the new structure, conductor and OPGW installation. Additionally, in approximately 30 locations, temporary structures may be required to increase the height of the conductor during construction so that construction vehicles and “live line” work (construction activities conducted while the lines are energized) can occur at a safe distance from the conductor. The temporary structures will then be removed along with the existing structures once the reconducting is complete.

The existing ROW width varies from 100 ft - 125-ft. The existing cleared ROW width also varies along the length of the transmission and tap lines. In order to obtain the required clearances under all weather conditions, the Project proposes the ROW be consistently cleared to 100-ft on the mainline and Crystal Lake Tap Line, and 125-ft on the Athol Tap Line. Some additional tree removal may be required to accommodate Project access since construction of new and/or re-establishment of access roads is proposed along the majority of the Project route.

Proposed Conditions:

The means and methods of construction to facilitate general maintenance and system improvement activities for the purpose of refurbishment work is given below. Details on each activities are provided in the Project Narrative (Section 1.6: Proposed Conditions).

- a. Structures
- b. Construction Access and Limit of Disturbance:
- c. Vegetation Management
- d. Access Routes, Work Pads and Envelopes and Pull Pads
 - o Access Road Routes
 - o Work Envelopes and Pull Pads
 - o Retaining Walls

Impacts: *The Project has been designed to avoid adverse impacts where feasible. As an active ROW, most of the Project area is already disturbed and maintained. Both potential and temporary impacts to various resource categories are summarized in Table 2: Summary of A1/B2 Transmission Lines Refurbishment Impacts in Section 1 of the Project Narrative and discussed in Sections 3 through 8.*

Project impacts include tree removal in excess of regular vegetation management; work within wetland resource areas; work within mapped rare species habitat. Most wetland impacts are temporary and are related to the use of construction matting and the temporary use of stabilizing material within work areas during construction. Permanent wetland impacts are primarily associated with the conversion of forested wetland to scrub-shrub wetland due to tree removal, which is anticipated to create a benefit to successional wildlife (please refer to Appendix F Wildlife Habitat Evaluation). New structures in BVW and BLSF will result in minimal amounts of permanent fill relative to the total extent of resource areas on the Project site. Please refer to Appendix C: National Grid Environmental Guidance Document (“EG-303NE”) for additional information on procedures and policies implemented during construction for ROW access, maintenance and construction best management practices.

MEPA: *The Project exceeds or potentially exceeds the MEPA thresholds identified on Pages ii*

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and iii this EENF.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

NOTE: *The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.*

Alternatives:

i. No Build Alternative

As required by 301 CMR 11.07(6)(f)(2), a No Build Alternative must be evaluated to establish a baseline against which the Project can be evaluated. However, in this instance, the No Build Alternative does not achieve the Project's goals and benefits. This Project consists of refurbishment and improvements to existing assets. If no action is taken, deteriorating structures will pose a safety risk to NEP personnel and will affect NEP's ability to provide reliable electrical service to members of the public. Given the condition of the existing circuits and the need to provide high speed communications between the substations these circuits serve, this is not a feasible alternative and was not evaluated further.

ii. 69 kV Rebuild Alternative

As stated above, future proofing the Lines for a 115 kV carrying capacity allows NEP to minimize the likelihood of repeat impacts to adjacent landowners and environmentally sensitive areas as customer and renewable energy needs continue to grow in the region. Refurbishing the Lines to operate with a 69 kV carrying capacity would not meet the identified need and therefore, was not considered a feasible alternative.

Additionally, due to the outage constraints associated with the A1/B2 Lines, the Project would need to utilize live line construction techniques. As such, the proposed replacement structures would be installed at a height above the existing structures, regardless of proposed voltage. Should the existing structures be replaced to meet 69 kV standards, this would only result in a decrease of approximately 5.5-ft in structure height from those proposed. Therefore, the minimum horizontal clearance requirements would be the same at 69 kV as they are for the proposed 115 V, and tree removal requirements on ROW would not be reduced. Refurbishing the Lines at 69 kV would not reduce environmental impacts and would not provide the benefit of operating the Lines at 115 kV in the future.

iii. Critical Asset Repair Alternative

A critical asset repair alternative was considered to address only the most critical asset related issues. However, this would require returning to the A1/B2 Lines repeatedly over time to complete less critical maintenance and improvement activities. This would result in repeated access and temporary impacts including temporary construction matting, within Public Open Space and Recreational Areas, adjacent Watershed Areas, BVW and other environmental resources and rare species habitat. Additionally, this alternative would not address the quantity of asset condition concerns, would not improve the reliability of existing communications between the substations served by the circuits, and would result in inefficiencies in revisiting the same ROW within a short time span. This alternative was deemed infeasible and not analyzed further.

iv. 115 kV Structure Design Alternatives

Double-circuit davit arm structures are proposed for the mainline and single-circuit davit arm structures are proposed for the tap lines; however, alternative structure types were evaluated. For the A1/B2 mainline, alternative structure type, davit arm length and installation method were evaluated and determined to be infeasible due to increased footprint, ice jump

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condition¹¹, soil conditions and safe clearance distance, respectively. For the tap lines, alternative structure types were evaluated and determined to be infeasible due to outage constraints, reliability concerns, and limiting risk of tree contact, respectively.

Conclusion:

As described above, alternative concepts, including a No Build Alternative, were initially considered to meet the identified needs, but ultimately rejected. The No Build Alternative was rejected because it would not address asset reliability and repair requirements. Partial refurbishment and rebuilding to 69 kV standards would require supplemental projects to adequately reinforce the A1/B2 Lines over the next decade. The proposed Project is the only alternative that meets the identified needs while minimizing overall project impacts. See Section 2 for additional detail on the described alternatives.

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:

Mitigation:

NEP follows a set of policies for ROW access, maintenance, and construction best management practices (“BMPs”). By consistently implementing these procedures, NEP ensures that transmission lines are maintained and constructed by trained personnel in a manner that minimizes potential impacts to the environment, adheres to permit conditions, and meets industry standards. Key elements of the construction policy include pre-construction field investigations, field inspections during construction, and postconstruction inspections.

Throughout construction, appropriate consideration will be given to Project implementation in a manner consistent with conditions of permits/authorizations and approved mitigation measures.

To minimize Project impacts, NEP has incorporated the following actions and considerations throughout the planning and design phases:

Several asset condition and reliability needs were combined into one project scope in an effort to reduce the need for repeat disturbances to wetlands and adjacent property owners in this shared ROW;

- Existing ROW and access roads are being used to avoid new land disturbance, where feasible;*
- Field investigations were completed to assess constructability and avoid/mitigate sensitive resources;*
- Agency consultations are in progress;*
- Replacement structures are being located outside of BVW where feasible; and*
- Temporary construction mat BMPs will be utilized to minimize wetland impacts.*

11 The maximum jump height of a transmission line after ice-shedding. Ice-shedding from conductors can cause significant vertical vibration of the transmission line.

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Additional mitigation measures will be implemented as required by state, federal and local requirements. NEP anticipates that the final mitigation package will be developed during the federal, state, and local permitting processes outlined in the next section, and that the package will fully address the required permit conditions and agency concerns. NEP anticipates that mitigation will demonstrate no net loss of existing wetland functions, values, and statutory interests within the watersheds.

If the project is proposed to be constructed in phases, please describe each phase:

Not applicable.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:

Is the project within or adjacent to an Area of Critical Environmental Concern?

Yes (Specify _____)

No

if yes, does the ACEC have an approved Resource Management Plan? ___ Yes ___ No;

If yes, describe how the project complies with this plan.

Will there be stormwater runoff or discharge to the designated ACEC? ___ Yes ___ No;

If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

RARE SPECIES:

Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see

http://www.mass.gov/dfwele/dfw/nhosp/regulatory_review/priority_habitat/priority_habitat_home.htm)

Yes (Specify ___ see below ___)

No

Three (3) bird, three (3) herptile, two (2) insect, and one (1) plant species are mapped along portions of the Project route Warwick, Royalston, Winchendon, Athol, Fitchburg, and Leominster.

The names and locations of these species are not provided, as requested by MA NHESP.)

See Project Narrative, Section 5: Rare Species.

HISTORICAL /ARCHAEOLOGICAL RESOURCES:

Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?

Yes (Specify: See below) No

NEP's cultural resource consultant, SWCA Environmental Consultants has conducted a cultural resources due diligence and sensitivity assessment and are conducting an archeological survey and historic architectural properties assessment,

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under a permit issued by the Massachusetts Historical Commission (“MHC”). See Project Narrative Section 6: Historical/Archaeological Resources.

If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? Yes (Specify _____) No

WATER RESOURCES:

Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? ___ Yes **X** No; if yes, identify the ORW and its location. _____

- *Notown Reservoir, Leominster, MA*
- *Fall Brook Reservoir, Leominster, MA*
- *Goodfellow Pond, Leominster, MA*
- *Simonds Pond, Leominster, MA*
- *Distributing Reservoir, Leominster, MA*
- *Morse Reservoir, Leominster, MA*
- *Parleys Brook Reservoir, Gardner, MA*

Approximately 40 Certified Vernal Pools (CVPs) are located within a half-mile radius of the ROW in Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling. There are no CVPs mapped within the ROW.

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Are there any impaired water bodies on or within a half-mile radius of the project site?

X Yes ___ No; if yes, identify the water body and pollutant(s) causing the impairment: See Table Below.

Impaired Waterways in MA¹² (on or within 0.5-mile radius of the Project site)					
Waterbody	Watershed	Water Type Category	Category # & Classification	Pollutant Causing Impairment	TMDL Cou
Millers River	Millers	River	5 Impaired - TMDL Requir	PCBs in Fish Tissue	0
Lawrence Brook	Millers	River	5 Impaired - TMDL Requir	PCBs in Fish Tissue	0
Boyce Brook	Millers	River	5 Impaired - TMDL Requir	PCBs in Fish Tissue	0
West Gulf Brook	Millers	River	5 Impaired - TMDL Requir	PCBs in Fish Tissue	0
Stockwell Brook	Millers	River	5 Impaired - TMDL Requir	PCBs in Fish Tissue	0
East Branch Tully River	Millers	River	5 Impaired - TMDL Requir	PCBs in Fish Tissue	0
Flag Brook	Nashua	River	2 Unimpaired for Some Uses	N/A	0
Fall Brook	Nashua	River	2 Unimpaired for Some Uses	N/A	0
Unnamed Tributary Burnt Mill Pond Brook	Nashua	River	3 No Uses Assessed	N/A	0
Richards Reservoir	Millers	Freshwater Lake	3 No Uses Assessed	N/A	0
Stoddard Pond	Millers	Freshwater Lake	4C Impairment Not Caused by a Pollutant	N/A	0

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Fall Brook Reservoir	Nashua	Freshwater Lake	3 No Uses Assessed	N/A	0
Notown Reservoir	Nashua	Freshwater Lake	3 No Uses Assessed	N/A	0
Sawmill Pond	Nashua	Freshwater Lake	4C Impairment Not Caused by a Pollutant	N/A	0
Otter River	Millers	River	5 Impaired - TMDL Required	PCBs in Fish Tissue	0
Priest Brook	Millers	River	2 Unimpaired for Some Uses	N/A	0
Mahoney Brook	Millers	River	5 Impaired - TMDL Required	PCBs in Fish Tissue	0
Wekepeke Brook	Nashua	River	5 Impaired - TMDL Required	<i>Escherichia Coli</i> (E.coli)	0
Beaver Flowage Pond	Millers	Freshwater Lake	3 No Uses Assessed	N/A	0
Crystal Lake	Millers	Freshwater Lake	3 No Uses Assessed	N/A	0
Lake Denison	Millers	Freshwater Lake	4A Impaired - TMDL Completed	N/A	2
Little Pond	Millers	Freshwater Lake	3 No Uses Assessed	N/A	0
Perley Brook Reservoir	Millers	Freshwater Lake	3 No Uses Assessed	N/A	0
Haynes Reservoir	Nashua	Freshwater Lake	3 No Uses Assessed	N/A	0
Morse Reservoir	Nashua	Freshwater Lake	3 No Uses Assessed	N/A	0
Round Meadow Lake	Nashua	Freshwater Lake	3 No Uses Assessed	N/A	0
Lake Samoset	Nashua	Freshwater Lake	4C Impairment Not Caused by a Pollutant	N/A	0

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? Yes No

STORMWATER MANAGEMENT:

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

NEP will submit a Stormwater Pollution Prevention Plan (“SWPPP”) for the Project in compliance with the EPA’s National Pollutant Discharge Elimination System (NPDES) program under the Stormwater Construction General Permit. The SWPPP establishes a construction period contact list, presents a description of the proposed work, and identifies stormwater controls, spill prevention, and inspection practices to be implemented for the management of construction-related stormwater discharges from the Project. The SWPPP clearly identifies parties responsible for monitoring and reporting any activities out of compliance with the SWPPP or other environmental permits or approvals, and for handling extraordinary situations. The SWPPP also defines monitoring to occur until all disturbed areas on the site have been stabilized using standard BMPs. In this manner, the potential impacts

12 MassGIS (Bureau of Geographic Information), December 2020, URL: <https://www.mass.gov/info-details/massgis-data-massdep-2016-integrated-list-of-waters-305b303d>

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associated with land disturbance (e.g. erosion and sedimentation) will be proactively managed so that impacts can be avoided. Please refer to Appendix C.

MASSACHUSETTS CONTINGENCY PLAN:

Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? Yes No ; if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response

Action Outcome classification): see below

RTN	Site Name	Site Address	Municipality	Compliance Status	Compliance Date
2-0012349	Pratts Junction Substation	Pratts Junction Rd	Sterling	RAO	8/9/2002

RTN 2-0012349 included as work will be conducted within the limits of the Disposal Site Boundary; however, it will not disturb the subsurface as only overhead work is proposed.

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes No ; if yes, describe which portion of the site and how the project will be consistent with the AUL:

An AUL was identified with the Pratts Junction Substation in Sterling, MA. However, no work is proposed within the limits of the AUL, nor will there be subsurface work within the Substation.

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN? Yes No if yes, please describe: _____

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood: _____

The intent is for all existing wood and steel towers proposed for removal to be transported to an appropriate recycling facility. The removal and recycling will be consistent with all applicable regulations.

(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes No ; if yes, please consult state asbestos requirements at <http://mass.gov/MassDEP/air/asbhom01.htm>

Describe anti-idling and other measures to limit emissions from construction equipment:

NEP will comply with state laws regulating the use of diesel-powered equipment and vehicle idling times during construction. NEP will also take measures to limit vehicle idling times and to reduce air emissions, including the following:

Any diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above to be used for 30 or more days over the course of construction will either be USEPA Tier 4-compliant or will be retrofitted with USEPA-verified (or equivalent) emission control devices such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) and installed on the exhaust system side of the diesel combustion engine.

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NEP requires the use of ultra-low sulfur diesel fuel in its diesel-powered construction equipment and limits idling time to five (5) minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts.

Vehicle idling is to be minimized during construction activities, in compliance with Massachusetts Anti-idling Law, G.L. c. 90 § 16A, c. 111 §§ 142A – 142M, and 310 CMR 7.11.

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ___ No **X**;
if yes, specify name of river and designation:

The closest designated scenic river to the Project site is the Nashua River which lies approximately four (4) miles away.

The mainstem of the Nashua River from the confluence of the North and South Nashua Rivers in Lancaster, Massachusetts, extends north to the Massachusetts-New Hampshire border, excluding:

- *From 700-ft upstream of the crest of Ice House Hydroelectric Project Dam to 500-ft downstream.*
- *From 9,240-ft upstream from the crest of the Pepperell Hydroelectric Project Dam to 1,000-ft downstream.*

If yes, does the project have the potential to impact any of the “outstandingly remarkable” resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River?

Yes ___ No ___ ; if yes, specify name of river and designation: _____;

if yes, will the project will result in any impacts to any of the designated “outstandingly remarkable” resources of the Wild and Scenic River or the stated purposes of a Scenic River.

Yes ___ No ___ ; if yes, describe the potential impacts to one or more of the “outstandingly remarkable” resources or stated purposes and mitigation measures proposed.

ATTACHMENTS:

1. List of all attachments to this document.
 - a. *Cover Letter*
 - b. *Appendix A: Project Figures*
 - i. *USGS Site Locus*
 - ii. *MEPA General Purpose Plans (Sheets 1-168)*
 - iii. *Structure Details*
 - c. *Appendix B: MEPA EENF Circulation List*
 - d. *Appendix C: National Grid Environmental Guidance Document (EG-303NE)*
 - e. *Appendix D: 2019-2023 Vegetation Management Plan*
 - f. *Appendix E: Supplemental Wetlands Information*
 - g. *Appendix F: Wildlife Habitat Evaluation*
 - h. *Appendix G: RMA Tool Output Report*
 - i. *Appendix H: EJ Community Locus Map, Environmental Justice Screening Form, Reference List, Public Meeting Invitation, Potential Pollution Sources Enforcement History*
 - j. *Appendix I: Agency Correspondence*
2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries. *See Appendix A, Locus Map.*
3. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities. *See Appendix A, MEPA General Purpose Plans.*
4. Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts. *See Appendix A, MEPA General Purpose Plans.*
5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase). *See Appendix A, MEPA General Purpose Plans.*
6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2). *See Cover Letter and Attached Circulation List.*
7. List of municipal and federal permits and reviews required by the project, as applicable. *See Table 3: Permit Consultation Requirements in the Project Narrative, Section 1: Project Information.*
8. Printout of output report from RMA Climate Resilience Design Standards Tool, available [here](#). *See Appendix G.*
9. Printout from the EEA [EJ Maps Viewer](#) showing the project location relative to Environmental Justice (EJ) Populations located in whole or in part within a 1-mile and 5-mile radius of the project site. *See Appendix H.*

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1) Yes ___ No; if yes, specify each threshold:

Direct alteration of 50 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or similar. (301 CMR 11.03(1)(a)).

Approximately 216 acres of permanent impacts is proposed, which comprises of 164 acres of tree removal proposed to obtain minimum horizontal clearances with the overhead line and tree removals within the Limit of Disturbance associated with preliminarily assumed secondary impacts from grading activities, and approximately, 51 acres will result from the proposed access routes anticipated to be cleared.

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Footprint of buildings	___ N/A ___	___ N/A ___	___ N/A ___
Internal roadways	___ N/A ___	___ N/A ___	___ N/A ___
Parking and other paved areas	___ N/A ___	___ N/A ___	___ N/A ___
Other altered areas (see Note 1)	~844	~216	~1060
Undeveloped areas (see Note 2)	~79	~19	~79
Total: Project Site Acreage	~1047	N/A	~1047

(1) This number reflects the existing ROW, with change due to tree removal and access road establishment/re-establishment. The utility ROW has been utilized for decades, and much of the land has been previously used and/or disturbed by utility-related activities, including the installation and maintenance of existing utility structures, access roads, and vegetation management for safety clearance.

(2) The existing undeveloped areas consist of the DCR property where tree removal is required to maintain sufficient clearances. Existing trails will be improved outside of the ROW. Tree removal and construction activities will remain within NEP's easement in Article 97 Land; thus, no change in Land Use is proposed.

Please refer to Section 3: Land Use in the Project Narrative.

B. Has any part of the project site been in active agricultural use in the last five years?

Yes ___ No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

No land in agricultural use will be converted to nonagricultural use.

- C. Is any part of the project site currently or proposed to be in active forestry use?
 Yes No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:
- D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? Yes No ; if yes, describe:
- E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? Yes No; if yes, does the project involve the release or modification of such restriction? Yes No; if yes, describe:
- F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? Yes No; if yes, describe:
- G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes No; if yes, describe:

III. Consistency

- A. Identify the current municipal comprehensive land use plan
Title: See below Date: See below

The current municipal comprehensive land use plans are:

- *Town of Athol – Athol Master Plan, November 2002*
- *Town of Winchendon - Community Master Plan, 2020*
- *City of Fitchburg - Vision 2020 - Fitchburg's Comprehensive Master Plan*
- *Town of Westminster Master Plan, 2014*
- *Town of Sterling Master Plan, March 2022 Final Draft*
- *Gardner Community Development Plan, 2006*

The Towns of Warwick and Royalston and the City of Leominster do not have comprehensive plans, and therefore, are not cited.

- B. Describe the project's consistency with that plan with regard to:
- 1) economic development See below
 - 2) adequacy of infrastructure See below
 - 3) open space impacts See below
 - 4) compatibility with adjacent land uses See below

The Project consists of upgrades to an existing utility line which will facilitate regional system electrical reliability. Therefore, it is consistent with the local planning documents.

Town of Athol

The Town of Athol Master Plan describes the Town's plans specific to Land Use and Zoning, Community Facilities and Housing, Economic Development, Historic and Scenic Resources, Transportation, Capital Improvement and Recreation.

A review of Athol's economic goals has concluded that the Project corresponds with the implementation of this Plan. One of the major economic goals in the Master Plan is to encourage economic development in the town without any destruction of natural resources and cultural landscape. As noted previously, the purpose of this Project is to undertake necessary upgrades and improvements to the existing electrical transmission system so it may continue to provide safe, reliable electric power, and to maintain compliance with regional and national electric standards. The Project is within an existing ROW, and no new cross-country ROWs are proposed. Similarly, the Project helps strengthen the infrastructure of Athol by providing reliable sources of electric power that are vital for the well-being of this community.

The Project is proposed to be constructed on NEP-owned land or easement, and within an existing transmission line ROW, and necessary measures will be taken to ensure no damage to the natural, historical, and open space resources, therefore it is not anticipated that the Project will have any impact on Land Use, Community Facilities and Housing, Economic Development, Historic and Scenic Resources, Transportation and Recreation.

Town of Winchendon

The Town of Winchendon Master Plan describes the Town's plans specific to Land Use, Open Space, Economic Development, Housing, Historic and Cultural Resources, Transportation and Circulation, Service and facilities, Community Health and Well-being.

A review of Winchendon's land use goals has concluded that the Project corresponds with the implementation of this Plan. The town's Master Plan outlines sets of land use goals that aim at promoting greener living and preservation of natural resources and wildlife habitats and protecting environmentally sensitive areas, along with the maintenance of open space and recreation lands. Similarly, economic development goals in the Master Plan summarize the goals of the town to develop an environmentally sound economy by promoting development and redevelopment of economic infrastructures. The Project complies and corresponds with the Master Plan as the purpose of this Project is to undertake necessary upgrades and improvements to the existing electrical transmission system so it may continue to provide safe, reliable electric power and to maintain compliance with regional and national electric standards. Furthermore, the work is within the existing ROW, and no new cross-country ROWs are proposed. The Project will implement, assess, and monitor work within sensitive areas such as wetland, conservation land, etc. and best management practices will be implemented to ensure protection and preservation of the resource areas.

The Project is proposed to be constructed on NEP-owned land or easement, and within an existing transmission line ROW, and necessary measures will be taken to ensure no damage to the natural, historical, and open space resources, therefore it is not anticipated that the Project will have any impact on Land Use, Open Space, Economic Development, Housing, Historic and Cultural Resources, Transportation and Circulation, Service and facilities, Community Health and Well-being.

City of Fitchburg

The City of Fitchburg Master Plan describes plans specific to Land Use, Economic Development, Housing, Natural Cultural and Historic Resources, Transportation and Circulation, and Open Space and Recreation.

A review of Fitchburg's economic goals has concluded that the Project corresponds with the implementation of this Plan. The main city character goal reviewed in the Master Plan outlines the protection of existing land uses, historic structures, landscapes, and environmentally sensitive areas. The Project has adapted recommendations listed in the land use section of the Plan. Reasonable site plan review will be done to ensure safety, aesthetic impacts, and environmental impacts of the Project. The economic goals and objectives in the document explicitly highlight the maintenance of utility systems which will support the businesses running in the city. The Project complies and corresponds with the Master Plan as the purpose of this Project is to undertake necessary upgrades and improvements to the existing electrical transmission system so it may continue to provide safe, reliable electric power and to maintain compliance with regional and national electric standards.

The Project is proposed to be constructed on NEP-owned land or easement, and within an existing transmission line ROW, and necessary measures will be taken to ensure no damage to the natural, historical, and open space resources, therefore it is not anticipated that the Project will have any

impact on Land Use, Economic Development, Housing, Natural Cultural and Historic Resources, Transportation and Circulation, and Open Space and Recreation.

Town of Westminster

The Town of Westminster Master Plan describes the Town's plans specific to Land Use and Zoning, Economic Development, Housing, Transportation and Circulation, and Open Space and Recreation.

The Westminster Master Plan sets forth a community goal and provides an outline on the development strategies to implement which strengthen the economy and promote sustainable and environmentally sound utilization of open space and recreation.

A review of Westminster's economic goals has concluded that the Project corresponds with the implementation of this Plan. Plans developed by the Town of Westminster for their economic development encourage the upgrade and expansion of infrastructures that are necessary for new economic development, as well as capitalizing the existing open spaces and community resources. The Project complies and corresponds with the Master Plan as the purpose of this Project is to undertake necessary upgrades and improvements to the existing electrical transmission system so it may continue to provide safe, reliable electric power and to maintain compliance with regional and national electric standards.

Additionally, the Plan sets forth open space and recreational objectives and goals. To comply with the open space and recreation objectives of maintaining coordination among the Town boards and the residents, the Project will take necessary steps to notify the Conservation Commission, and the town's Planning Board. Furthermore, the Project is proposed to be constructed on NEP-owned land or easement, and within an existing transmission line ROW, and necessary measures will be taken to ensure no damage to the natural, historical, and open space resources, therefore it is not anticipated that the Project will have any impact on Land Use, Economic Development, Housing, Transportation and Circulation, and Open Space and Recreation.

Town of Sterling

The Town of Sterling Draft Master Plan describes the Town's plans specific to Land Use and Development, Economic Development, Housing, Natural, Historic, and Cultural Resources, Transportation and Circulation, and Open Space and Recreation.

A review of Sterling's land use and open space goals has concluded that the Project corresponds with the implementation of this Plan. The Town of Sterling works in concert alongside their residents, business owners, officials, and organizations to facilitate land use planning which capitalizes on the region's most important assets. The Plan developed review growth trends within the region and outline sets of strategic goals and policies aimed at promoting sound land use planning that protects the town's rural and scenic character. Utility facilities or services are not explicitly addressed.

As noted previously, the purpose of the Project is to undertake necessary upgrades and improvements to the existing electrical transmission system so it may continue to provide safe, reliable electric power and to maintain compliance with regional and national electric standards. Additionally, the Project is proposed to be constructed on NEP-owned land or easement, and within an existing transmission line ROW, and necessary measures will be taken to ensure no damage to

the natural, historical, and open space resources, therefore it is not anticipated that the Project will have any impact on Land Use, Economic Development, Housing, Natural, and Historic, and Cultural Resources, Transportation and Circulation, and Open Space and Recreation.

- C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)

RPA: Montachusett Regional Planning Commission

Title: Montachusett Regional Strategic Framework Plan Date April 2011

- D. Describe the project's consistency with that plan with regard to:

- 1) economic development See below
- 2) adequacy of infrastructure See below
- 3) open space impacts See below

The Project is located within the areas covered by the Montachusett Regional Planning Commission ("MRPC"). Montachusett Regional Strategic Framework Plan describes the Region's plans specific to Housing, Land Use, Economic Development, Historic Preservation, Open Space Preservation, Community Development, Energy and Water Management. Policy documents developed by this Commission reviewed growth trends within the region and outlined sets of strategic goals and policies aimed at promoting sound land use planning. They evaluated how growth trends are likely to affect development within their regions as well as in each subregion in the future. The regional objective and goals in the document are primarily concerned with promoting equal housing rights, promoting economic activity that retains and attracts income, and preserving and enhancing the availability of open space. Utility facilities or services are not explicitly addressed.

As noted previously, the purpose of this Project is to undertake necessary upgrades and improvements to the existing electrical transmission system so it may continue to provide safe, reliable electric power and to maintain compliance with regional and national electric standards. The Project is within an existing ROW, and no new cross-country ROWs are proposed. As a result, this Project is consistent with the policies contained in the planning documents, and a safe, reliable source of electric power is vital to the overall well-being of these communities.

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? **X** Yes ___ No; if yes, specify, in quantitative terms:

ENF: Rare Species - taking of an endangered or threatened species or species of special concern, provided that the Project site is two or more acres and includes an area mapped as a Priority Site of Rare Species Habitats and Exemplary Natural Communities. (301 CMR 11.03(2)(b)(2)).

Consultations are ongoing with NHESP but a take is anticipated.

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

B. Does the project require any state permits related to **rare species or habitat**? **X** Yes ___ No

C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? **X** Yes ___ No.

D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

II. Impacts and Permits

A. Does the project site fall within Priority or Estimated Habitat in the current Massachusetts Natural Heritage Atlas (attach relevant page)? **X** Yes ___ No. If yes,

- 1. Have you consulted with the Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP)? **X** Yes ___ No; if yes, have you received a determination as to whether the project will result in the "take" of a rare species? ___ Yes **X** No; if yes, attach the letter of determination to this submission.

Consultations with NHESP are ongoing for the Project. A MESA Checklist, NHESP File No: 22-41082 for Access Road Upgrades and Geotechnical Borings was issued on 6/5/2022.

2. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes ___ No; if yes, provide a summary of proposed measures to minimize and mitigate rare species impacts

Consultations with NHESP are ongoing for the Project. A MESA Checklist, NHESP File No: 22-41082 for Access Road Upgrades and Geotechnical Borings was issued on 6/5/2022.

3. Which rare species are known to occur within the Priority or Estimated Habitat?

The Project area overlaps with Estimated and/or Priority Habitat for three (3) bird, three (3) herptile, two (2) insect, and one (1) plant species. The names and locations of these species are not provided, as requested by MA NHESP.

4. Has the site been surveyed for rare species in accordance with the Massachusetts Endangered Species Act? ___ Yes **X** No

4. If your project is within Estimated Habitat, have you filed a Notice of Intent or received an Order of Conditions for this project? ___ Yes **X** No; if yes, did you send a copy of the Notice of Intent to the Natural Heritage and Endangered Species Program, in accordance with the Wetlands Protection Act regulations? ___ Yes ___ No

Notices of Intent will be submitted at a later date to each municipality as required under the WPA. Copies of the Notice of Intent ("NOI") will be provided to the NHESP in accordance with the regulations at that time.

B. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? Yes No; if yes, provide a summary of proposed measures to minimize and mitigate impacts to significant habitat:

Consultations with NHESP are ongoing for the Project. A MESA Checklist, NHESP File No: 22-41082 for Access Road Upgrades and Geotechnical Borings was issued on 6/5/2022.

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? Yes
 No; if yes, specify, in quantitative terms:

<u>MEPA Threshold</u>	<u>Project Triggering Activity</u> ¹³
<p>EIR: Wetlands, Waterways and Tidelands: Alteration of one or more acres of bordering vegetated wetlands (BVW). (301 CMR 11.03(3)(a)(1)(a))</p>	<p>Bordering Vegetated Wetland: 2,868,580 sf (~66 acres)</p>
<p>EIR: Wetlands, Waterways and Tidelands: Alteration of ten or more acres of any other wetlands. (301 CMR 11.03(3)(a)(1)(b))</p>	<p><i>Temporary- approximately 2,200,651 sf construction matting (~51 acres)</i></p>
<p>ENF: Wetlands, Waterways and Tidelands: Alteration of 500 or more linear feet of bank along a fish run or inland bank. (301 CMR 11.03(3)(b)(1)(b))</p>	<p><i>Permanent- approximately 1,896 sf fill from new/or replacement structure foundations. Approximately, 666,032 sf (~15 acres) of forested wetland conversion due to tree removals.</i></p>
<p>ENF: Wetlands, Waterways and Tidelands: Alteration of one half or more acres of any other wetlands. (301 CMR 11.03(3)(b)(1)(f))</p>	<p>Riverfront Area: 2,614,816 sf (~60 acres)</p>
	<p><i>Temporary - approximately 513,137 sf (~12 acres) construction matting.</i></p> <p><i>Permanent – approximately 3,476 sf fill from new/or replacement structure foundations; 1,349,406 sf (~31 acres) for cut/fill for work envelopes, pull pads, access and retaining walls; and 748,796 sf (~17 acres) tree removals.</i></p>
	<p>Bordering Land Subject to Flooding: 389,517 sf (~9 acres)¹⁴</p> <p><i>Temporary – approximately 13,939 sf construction matting.</i></p> <p><i>Permanent – approximately 632 sf of fill from structure foundations; and 81,022 sf (~2 acre) of tree removals; and 237,402 sf (~5 acres) of cut and fill; 56,522 sf (~ 1 acre) of road building.</i></p>
	<p>Isolated Wetlands: 85,021 sf (~2 acres)</p> <p><i>Temporary – approximately 73,181 construction matting</i></p> <p><i>Permanent - approximately 79 sf of fill from one (1) structure foundation. Approximately, 11,761 sf of forested wetland conversion due to tree removals.</i></p>
	<p>Inland Bank: 94,526 sf</p> <p><i>Temporary¹⁵ – approximately 67,954 sf of construction matting which is anticipated to span the stream bank and not result in an impact.</i></p>

13 Note that impacts located within the limits of Riverfront Area overlap with impacts to BLSF, BVW, and the 100-ft Buffer Zone. Therefore, the total impacts to the Project Site are not equal to the sum of alterations.

14 56,521 sf of access road and 237,402 sf of cut associated with work envelopes, pull pads and access proposed in BLSF; however, areas will be overexcavated and not result in fill.

15 In most cases, construction mat crossing will span the Bank of rivers and stream; however, the potential for alteration has been accounted for in the review of MEPA Thresholds.

	<i>Permanent – approximately 26,572 sf of tree removals.</i>
--	--------------------------------------------------------------

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? Yes ___ No; if yes, specify which permit:

- *Individual Section 401 Water Quality Certification (“WQC”) and Variance from MassDEP.*
- *Orders of Conditions from local Conservation Commissions.*

C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? Yes ___ No; if yes, has a Notice of Intent been filed? ___ Yes No;

Note: while Notices of Intent have not yet been submitted for this specific Project, several have been filed for geotechnical borings which will be used to inform the final scope and design.

if yes, list the date and MassDEP file number: _____;
 if yes, has a local Order of Conditions been issued? ___ Yes ___ No;
 Was the Order of Conditions appealed? ___ Yes ___ No.
 Will the project require a Variance from the Wetlands regulations? ___ Yes No.

B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

Impacts are proposed within Bordering Vegetated Wetland, Inland Bank, Riverfront Area and Bordering Land Subject to Flooding delineated within the Project area. In addition, intermittent and perennial streams were also identified on site. See the wetland resource area descriptions in Section 4: Wetlands and Wildlife and Appendix F: Supplemental Wetlands Information. The MEPA General Purpose Plans in Appendix A depict these resource areas on the Project plans. The temporary and permanent impacts are identified in Section 4.

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

<u>Coastal Wetlands</u>	<u>Area (square feet) or</u>	<u>Temporary or</u>	
	<u>Length (linear feet)</u>	<u>Permanent Impact?</u>	

Land Under the Ocean _____

Designated Port Areas _____

Coastal Beaches _____

Coastal Dunes _____

Barrier Beaches _____

Coastal Banks _____

Rocky Intertidal Shores _____

Salt Marshes _____

Land Under Salt Ponds _____

Land Containing Shellfish _____

Fish Runs _____

Land Subject to Coastal Storm Flowage _____

Inland Wetlands

Bank (lf) ~8,599 lf; ~ 4,180 lf temporary; permanent

Bordering Vegetated Wetlands ~2,200,651 sf; ~667,928 sf temporary; permanent

Isolated Vegetated Wetlands ~73,181 sf; 11,840 sf temporary; permanent

Land under Water ~32,206 sf; 158 sf temporary; permanent

Isolated Land Subject to Flooding _____ N/A _____ N/A _____

Bordering Land Subject to Flooding ~13,939 sf; ~375,578 sf temporary; permanent

Riverfront Area ~513,137 sf; ~2,101,679 sf temporary; permanent

D. Is any part of the project:

1. proposed as a **limited project**? Yes ___ No; if yes, what is the area (in sf)?

The entire project can be considered a limited project.

2. the construction or alteration of a **dam**? ___ Yes No; if yes, describe:

3. fill or structure in a **velocity zone** or **regulatory floodway**? Yes ___ No

4. dredging or disposal of dredged material? ___ Yes No; if yes, describe the volume _____ of dredged material and the proposed disposal site:

5. a discharge to an **Outstanding Resource Water (ORW)** or an **Area of Critical Environmental Concern (ACEC)**? Yes ___ No

6. subject to a wetlands restriction order? ___ Yes No; if yes, identify the area (in sf):

7. located in buffer zones? Yes ___ No; if yes, how much (in sf) _____

4,699,005 sf (approximately 108 acres); Primarily due to cut/fill for work envelopes, and access road establishment and improvements. All areas altered will be revegetated with native vegetation.

E. Will the project:

1. be subject to a local wetlands ordinance or bylaw? Yes ___ No

2. alter any federally-protected wetlands not regulated under state law? Yes ___ No; if what is the area (sf)? yes,

For the purpose of this filing, it assumed that all Isolated Vegetated Wetlands not meeting the criteria for Isolated Land Subject to Flooding are federally jurisdictional. Temporary impacts total approximately 73,181 sf and permanent impacts total approximately 11,840 sf.

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? Yes ___ No; if yes, is there a current Chapter 91 License or Permit affecting the project site? ___ Yes No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

Pursuant to 310 CMR 9.05(3)(g)(1), because a final Order of Conditions issued under M.G.L. c. 131, §40 and 310 CMR 10.00 will be issued for all Project waterways crossing, the crossings do not require authorization under c. 91. Please refer to Section 11: Regulatory Compliance in the Project Narrative for additional detail.

B. Does the project require a new or modified license or permit under M.G.L.c.91? Yes No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use?

Current ___ Change ___ Total ___

If yes, how many square feet of solid fill or pile-supported structures (in sf)?

C. For non-water-dependent use projects, indicate the following:

Area of filled tidelands on the site: ___ N/A

Area of filled tidelands covered by buildings N/A

For portions of site on filled tidelands, list ground floor uses and area of each use:

Does the project include new non-water-dependent uses located over flowed tidelands?

___ Yes No

Height of building on filled tidelands ___ N/A

Also show the following on a site plan: Mean High Water, Mean Low Water, Water-dependent Use Zone, location of uses within buildings on tidelands, and interior and exterior areas and facilities dedicated for public use, and historic high and historic low water marks.

D. Is the project located on landlocked tidelands? ___ Yes No; if yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ___ Yes **X** No; if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? ___ Yes **X** No;

(NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)

G. Does the project include dredging? ___ Yes **X** No; if yes, answer the following questions:

What type of dredging? Improvement ___ Maintenance ___ Both ___

What is the proposed dredge volume, in cubic yards (cys) _____

What is the proposed dredge footprint ___ length (ft) ___ width (ft) ___ depth (ft);

Will dredging impact the following resource areas?

Intertidal Yes ___ No ___; if yes, ___ sq ft

Outstanding Resource Waters Yes ___ No ___; if yes, ___ sq ft

Other resource area (i.e. shellfish beds, eel grass beds) Yes ___ No ___; if yes ___ sq ft

If yes to any of the above, have you evaluated appropriate and practicable steps to: 1) avoidance; 2) if avoidance is not possible, minimization; 3) if either avoidance or minimize is not possible, mitigation?

If no to any of the above, what information or documentation was used to support this determination?

Provide a comprehensive analysis of practicable alternatives for improvement dredging in accordance with 314 CMR 9.07(1)(b). Physical and chemical data of the sediment shall be included in the comprehensive analysis.

Sediment Characterization

Existing radation analysis results? ___ Yes ___ No; if yes, provide results.

Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? ___ Yes ___ No; if yes, provide results.

Do you have sufficient information to evaluate feasibility of the following management options for dredged sediment? If yes, check the appropriate option.

Beach Nourishment ___

Unconfined Ocean Disposal ___

Confined Disposal:

Confined Aquatic Disposal (CAD) ___

Confined Disposal Facility (CDF) ___

Landfill Reuse in accordance with COMM-97-001 ___

Shoreline Placement ___

Upland Material Reuse ____

In-State landfill disposal ____

Out-of-state landfill disposal ____

(NOTE: This information is required for a 401 Water Quality Certification.)

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? ____ Yes **X** No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

B. Is the project located within an area subject to a Municipal Harbor Plan? ____ Yes **X** No; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

WATER SUPPLY SECTION

I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes **X** No; if yes, specify, in quantitative terms:
- B. Does the project require any state permits related to **water supply**? ___ Yes **X** No; if yes, specify which permit:
- C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

II. Impacts and Permits

A. Describe, in gallons per day (gpd), the volume and source of water use for existing and proposed activities at the project site:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Municipal or regional water supply	_____	_____	_____
Withdrawal from groundwater	_____	_____	_____
Withdrawal from surface water	_____	_____	_____
Interbasin transfer	_____	_____	_____

(NOTE: Interbasin Transfer approval will be required if the basin and community where the proposed water supply source is located is different from the basin and community where the wastewater from the source will be discharged.)

- B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? ___ Yes ___ No
- C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted? ___ Yes ___ No; if yes, attach a map of the drilling sites and a summary of the alternatives considered and the results. _____
- D. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)? _____ Will the project require an increase in that withdrawal? ___ Yes ___ No; if yes, then how much of an increase (gpd)? _____
- E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? ___ Yes ___ No. If yes, describe existing and proposed water supply facilities at the project site:

Permitted	Existing	Avg	<u>Project Flow</u>	<u>Total</u>
-----------	----------	-----	---------------------	--------------

	<u>Flow</u>	<u>Daily Flow</u>
Capacity of water supply well(s) (gpd)	_____	_____
Capacity of water treatment plant (gpd)	_____	_____

F. If the project involves a new interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

G. Does the project involve:

1. new water service by the Massachusetts Water Resources Authority or other agency of _____ the Commonwealth to a municipality or water district? Yes No
2. a Watershed Protection Act variance? Yes No; if yes, how many acres of alteration?
3. a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities? Yes No

III. Consistency

Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities and services:

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **wastewater**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Discharge of sanitary wastewater	_____	_____	_____
Discharge of industrial wastewater	_____	_____	_____
TOTAL	_____	_____	_____

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Discharge to groundwater	_____	_____	_____
Discharge to outstanding resource water	_____	_____	_____
Discharge to surface water	_____	_____	_____
Discharge to municipal or regional wastewater facility	_____	_____	_____
TOTAL	_____	_____	_____

B. Is the existing collection system at or near its capacity? ___ Yes ___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

C. Is the existing wastewater disposal facility at or near its permitted capacity? ___ Yes ___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? ___ Yes

___ No; if yes, describe as follows:

	<u>Permitted</u>	Existing	Avg	<u>Project Flow</u>	<u>Total</u>
	<u>Daily Flow</u>				
Wastewater treatment plant capacity					
(in gallons per day)	_____	_____	_____	_____	_____

E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

(NOTE: Interbasin Transfer approval may be needed if the basin and community where wastewater will be discharged is different from the basin and community where the source of water supply is located.)

F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district? ___ Yes ___ No

G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? ___ Yes ___ No; if yes, what is the capacity (tons per day):

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Storage	_____	_____	_____
Treatment	_____	_____	_____
Processing	_____	_____	_____
Combustion	_____	_____	_____
Disposal	_____	_____	_____

H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

III. Consistency

- A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:

- B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ___ Yes ___ No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? Yes No; if yes, specify, in quantitative terms:

C. Does the project require any state permits related to **state-controlled roadways**? Yes No; if yes, specify which permit:

State Highway Access Permit for Non-Municipal Utility

- *Winchendon, Baldwinville State Road (Route 202)*
- *Westminster, State Road East*
- *Westminster, Depot Road/Narrows Road*
- *Westminster, Route 2*
- *Westminster/ Fitchburg, Route 2 and associated ramps (Exit 27)*
- *Fitchburg, Route 2 and associated ramps and Princeton Road (Exit 28)*
- *Fitchburg/Leominster, Route 2*
- *Leominster, Central Street*

State Highway Permanent Access Permit for Non-Municipal Utility

- *Proposed structures within Highway Layout¹⁶*
- *Proposed access road within a DOT owned parcel*

MassDOT is expected to review the Project for:

- *Overhead wire crossings of state highways*
- *Temporary access during construction onto the NEP Project ROW from state highways*
- *Permanent Access Permit for new access road and proposed structures within the Highway Layout*

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Number of parking spaces	N/A	N/A	N/A
Number of vehicle trips per day	N/A	N/A	N/A
ITE Land Use Code(s):	N/A	N/A	N/A

16 NEP is evaluating the location of replacements structures along Depot Road in Westminster. The original easement CRT 87 (*Charles H. Dupee et ux*), granted rights to NEP that allow the structure relocation. In addition, the highway taking/relocation in 1985 reserved the rights of all electric transmission easements. The structure relocation is being proposed as an "in-kind" replacement. Should MassDOT deem it to be otherwise, a permanent access permit may be required. NEP will consult with MassDOT.

The Project will not cause permanent traffic impacts and is not anticipated to cause significant temporary traffic impacts. During construction, the shield wires and conductors will be installed using tensioning equipment to pull the conductors through the stringing blocks. When this activity occurs near state roadways, temporary guard structures or boom trucks may be placed at road and highway crossings to ensure public safety. NEP is reviewing the proposed location of guard structures.

Proposed construction traffic will be temporary in nature, occurring along different sections of NEP’s Project ROW during the various stages of construction. Traffic will be limited to construction-related vehicles accessing the utility ROW using existing routes off state highways. Traffic volume during construction or maintenance of the utility line will not significantly affect existing volumes or adversely impact the ability of existing traffic to safely navigate the roadway.

B. What is the estimated average daily traffic on roadways serving the site?

	<u>Roadway</u>	<u>Existing</u>	<u>Change</u>	<u>Total</u>
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____

Intermittent construction-related traffic associated with Project construction will occur over the entire construction period. Construction equipment typically will gain access to the ROWs from public roadways crossing the ROWs in various locations along the route. Because each of the construction tasks will occur at different times and locations over the course of the construction, traffic will be intermittent at these entry roadways. Traffic will consist of vehicles ranging from pick-up trucks to heavy construction equipment to large trailers delivering materials.

Proposed construction traffic will be temporary in nature, occurring along different sections of NEP’s Project ROW during the various stages of construction. Traffic will be limited to construction-related vehicles accessing the utility ROW using existing routes off state highways. Traffic volume during construction or maintenance of the utility line will not significantly affect existing volumes or adversely impact the ability of existing traffic to safely navigate the roadway. A detailed description on traffic on roadways is provided in the Project Narrative (Section 10.4 Construction Traffic and Equipment).

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the _____ project proponent will implement:

MassDOT Districts 2 & 3 will be contacted to discuss specific design information and anticipated Project activities within highway jurisdiction. With MassDOT’s input, Traffic Management Plans with complete details of proposed work will be developed and submitted to MassDOT for review and approval prior to the start of Project construction. Enforceable commitments in the Traffic Management Plans will be carried out by NEP to ensure that all proposed traffic mitigation strategies will be implemented as the Project proceeds. Such strategies may include, as appropriate, traffic management procedures; construction time restrictions; signage; installation of track pads to minimize soil in roadways; and/or restoration of vegetation along soft shoulders after construction. All work will occur in accordance with NEP Policy for ROW Access, Maintenance _____ and _____ Construction

Best Management Practices (please refer to the Project Narrative, and Appendix C: National Grid Environmental Guidance Document (“EG-303”)).

- D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

Not applicable.

- C. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site? ___ Yes ___ No; if yes, describe if and how will the project will participate in the TMA:

Not applicable.

- D. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities? Yes ___ No; if yes, generally describe:

Project activities will occur in the immediate vicinity of the following rail lines:

- **CSX Fitchburg Line - Sterling, MA**
- **Patriot Corridor Line - Athol & Gardner, MA**

- E. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)?

The A1/B2 ROW is approximately 3.25 miles away from the nearest airport (“Fitchburg Municipal Airport”). Since Project activities are greater than two (2) miles from the nearest Municipal Airport Runway, a Massachusetts Aeronautics Commission Airspace Review Form is not required. Project activities are greater than four (4) miles from a major airport that has a runway long enough to trigger a Federal Aviation Administration (“FAA”) review.

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

Project construction will not affect transit, pedestrian, or bicycle transportation facilities since work will primarily occur on a cross-country NEP ROW, which is not designated for public use. The Project is consistent with federal, state, regional and local plans and policies; minimal, if any, impacts related to roadways or other transportation facilities are anticipated.

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))?
___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **roadways or other transportation facilities**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

A. Describe existing and proposed transportation facilities in the immediate vicinity of the project site:

B. Will the project involve any

- 1. Alteration of bank or terrain (in linear feet)? _____
- 2. Cutting of living public shade trees (number)? _____
- 3. Elimination of stone wall (in linear feet)? _____

III. Consistency -- Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan:

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))?

Yes No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **energy**? Yes No; if yes, specify which permit:

Energy Facilities Siting Board, Approval under M.G.L. c.164 § 69J

Department of Public Utilities, Approval to Construct under M.G.L. c.164 § 72

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

II. Impacts and Permits

A. Describe existing and proposed energy generation and transmission facilities at the project site:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Capacity of electric generating facility (megawatts)	N/A	N/A	N/A
Length of fuel line (in miles)	N/A	N/A	N/A
Length of transmission lines (in miles)	54 Miles	N/A	54 Miles
Capacity of transmission lines (in kilovolts)	69 kV	115kV	115kV

B. If the project involves construction or expansion of an electric generating facility, what are:

1. the facility's current and proposed fuel source(s)? N/A
2. the facility's current and proposed cooling source(s)? N/A

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way?
 Yes No; if yes, please describe:

D. Describe the project's other impacts on energy facilities and services:

The Project proposes complete asset refurbishment, system improvements and the capacity to accommodate forecasted customer and renewable interconnection needs. The purpose is to ensure reliable and continuous electricity is provided to its customers within Worcester County. Although the Project will continue to transmit electricity at 69 kV, NEP has planned and designed the Project to support transmission of a higher voltage since it is anticipated 115 kV will be needed to support higher volumes of currently active and forecasted renewable energy resources in this region, within the lifetime

of the structures. NEP will also be installing OPGW, which serves a dual purpose by providing the necessary electrical grounding in the event of lightning strikes with the additional feature of enabling telecommunication along the mainline, tap lines, and between substations. This telecommunication is critical to identifying problems, such as damage to the infrastructure from storm events or storm related outages, enabling NEP to respond quickly to any problems with the transmission of electricity. In addition, due to poor access along most of the ROW corridors, access improvements or re-establishment and construction of new access will be undertaken to conduct the proposed work and support future maintenance of the proposed infrastructure.

III. Consistency

Describe the project's consistency with state, municipal, regional, and federal plans and policies for enhancing energy facilities and services:

The Project, addressing asset conditions and the need for system improvements, includes refurbishment activities to the existing electrical structures, improvements to access, installation of stormwater management features, and the installation of six (6) vertical jumper switch structures. As a result, the Project will result in the following impacts with regard to enhanced energy facilities and services:

- *Safe and reliable access to each transmission structure.*
- *Reliable and continuous electricity supply for customers, including increased reliability during extreme weather events, such as storms.*
- *Lowered probability of flashover of the insulation¹⁷ during lightning strikes.*
- *Enabling telecommunication along the transmission lines and between substations.*
- *Capacity for transmission of electricity at 115 kV to accommodate forecasted regional and customer needs within the lifetime of the structures. This includes currently active and forecasted renewable energy resources in this region.*
- *Support for future interconnections from renewable energy projects.*

These impacts align with the following regional, state, and municipal plans and policies for enhancing energy facilities and services:

- *Federal*

The Project will provide more reliable and safe electric service in the region as well as create capacity for clean energy distribution in the future. The Energy Policy Act of 2005 provides specific incentives for the generation and use of clean energy sources such as wind power and tidal power. While much of the Act pertains to gasoline sales and production of oil and gas, the Project shows alignment with the provisions of the Act which foster the development of renewable energies and the development of an overall stronger energy infrastructure.

Additionally, the Project is consistent with the Inflation Reduction Act of 2022; while newly signed into law, various Inflation Reduction Act provisions incentivize consumers' use of clean energy to

¹⁷ An unintended high voltage electric discharge over or around an insulator, or sparking between two or more adjacent conductors that might cause frequent outages.

power their homes and vehicles while other provisions enable the reduction of greenhouse gas emissions. Therefore, the Project's goal of building capacity to provide more consumers with clean energy (which is classified as zero-emission) to power their homes and vehicles shows alignment with this federal policy.

- *State*

The Global Warming Solutions Act: On August 7, 2008, Governor Patrick signed into law the Global Warming Solutions Act ("GWSA"). The GWSA established aggressive greenhouse gas ("GHG") emissions reduction targets of 25% from 1990 levels by 2020 and 80% from 1990 levels by 2050. Pursuant to the GWSA, the Secretary of EEA issued the Clean Energy & Climate Plan for 2020 in December of 2010. Among other provisions, the GWSA obligates administrative agencies such as the EFSB, in considering and issuing permits, to consider reasonably foreseeable climate change impacts (e.g., additional GHG emissions) and related effects (e.g., sea level rise).

The Project will have no adverse climate change impacts or negative effects on sea levels. Consequently, the Project is consistent with the GWSA.

Massachusetts Clean Energy and Climate Plan: Pursuant to the GWSA, as amended in 2021 by An Act Creating A Next-Generation Roadmap for Massachusetts Climate Policy, the Secretary of the Executive Office of Energy and Environmental Affairs ("EEA") has adopted the interim 2025 statewide greenhouse gas emissions and the interim 2030 greenhouse gas emissions; the emissions limits increased to at least 50% below the 1990 baseline by 2030, at least 75% below the 1990 baseline by 2040, and at least 85% below the 1990 baseline by 2050. The Plan expresses the State's vision for a future in which there is minimal reliance on fossil fuels, as well as the State's confidence that Massachusetts can help lead the clean energy transition which will mean more well-paying jobs, improved public health, reduced consumer costs, and better quality of life for all residents. As the Project will increase capacity for transmission of energy from renewable sources, the Project is consistent with the 2025/2030 CECP.

An Act Driving Clean Energy and Offshore Wind: On August 12, 2022, Governor Baker signed An Act Driving Energy and Offshore Wind into law, which, among other provisions, set an offshore wind development minimum target. As the Project will increase capacity for transmission of energy from renewable sources such as wind energy, the Project is consistent with the Act.

- *Regional*

Regional Greenhouse Gas Initiative: In January 2007, Massachusetts joined the Regional Greenhouse Gas Initiative ("RGGI"), a cooperative effort by Northeast and Mid-Atlantic States to reduce CO2 emissions from large fossil-fueled power plants. In 2018, Massachusetts joined eight other states in developing amendments to revise the RGGI, including reductions to the regional cap and other programmatic changes. As the Project will increase capacity for transmission of energy from renewable sources, which do not produce carbon emissions as part of the electricity generation process, the Project is consistent with the RGGI.

- *Municipal*

The Green Communities Act: On July 2, 2008, Massachusetts Governor Deval Patrick signed into law the Green Communities Act. The Green Communities Act is a comprehensive, multi-faceted energy reform bill that encourages energy and building efficiency, promotes renewable energy, creates green communities, implements elements of the Regional Greenhouse Gas Initiative, and provides market incentives and funding for various types of energy generation. The Green Communities Act (as amended and supplemented by St. 2012, c. 209, An Act Relative to Competitively Priced Electricity) can be expected to result in greater renewable supplies and substantial new conservation initiatives in future years.

In order to achieve Green Community Designation, municipalities must meet five criteria: (1) Criterion 1 is met by passing zoning in designated locations for the as-of-right siting of renewable or alternative energy generating facilities, research and development facilities, or manufacturing facilities; (2) Criterion 2 is met by adopting an expedited application and permitting of one year at most, under which facilities interested in locating their facility in a designated renewable zone may be sites within the municipality; (3) Criterion 3 is met by (i) establishing an energy baseline inventory for municipal buildings and facilities, and (ii) adopting an Energy Reduction Plan demonstration a reduction of 20% of energy use after five years of implementation; (4) Criterion 4 is met if all departments within a Green Community purchase fuel-efficient vehicles for municipal use, whenever such vehicles are commercially available and practicable; and (5) Criterion 5 is met if municipalities minimize the life-cycle cost of all newly constructed homes and buildings.

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling are all designated Green Communities.

The improvements to the transmission system in the region will further the goals of the Green Communities Act by assuring reliable, efficient energy supply. The Project also supports the communities' interest in an energy supply from renewable energy sources. The Project, therefore, advances the important policy objectives of the Green Communities Act.

The Massachusetts Municipal Vulnerability Preparedness ("MVP") Grant Program : The MVP Grant Program was created in 2017, as result of Executive Order No. 569, signed by Governor Charlie Baker on September 16, 2016. The Program provides support for cities and towns in Massachusetts to identify climate hazards, assess vulnerabilities, and develop action plans to improve resilience to climate change. Communities that complete the MVP Planning Grant process become designated as an MVP Community and are eligible for MVP Action Grant funding to implement the priority actions identified through the planning process.

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling have all achieved MVP designation. All nine, through their planning processes, identified power outages as vulnerabilities in their communities. Additionally, some of the plans also addressed transitions to clean energy sources.

As the Project will increase reliability and decrease likelihood of outages during extreme weather events, as well as capacity for transmission of energy from renewable sources, the Project is consistent with MVP.

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

II. Impacts and Permits

A. Does the project involve construction or modification of a major stationary source (see 310 CMR 7.00, Appendix A)? ___ Yes ___ No; if yes, describe existing and proposed emissions (in tons per day) of:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Particulate matter	_____	_____	_____
Carbon monoxide	_____	_____	_____
Sulfur dioxide	_____	_____	_____
Volatile organic compounds	_____	_____	_____
Oxides of nitrogen	_____	_____	_____
Lead	_____	_____	_____
Any hazardous air pollutant	_____	_____	_____
Carbon dioxide	_____	_____	_____

B. Describe the project's other impacts on air resources and air quality, including noise impacts:

III. Consistency

A. Describe the project's consistency with the State Implementation Plan:

B. Describe measures that the proponent will take to comply with other federal, state, regional, and local plans and policies related to air resources and air quality:

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **solid and hazardous waste**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

II. Impacts and Permits

A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of solid waste? ___ Yes ___ No; if yes, what is the volume (in tons per day) of the capacity:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Storage	_____	_____	_____
Treatment, processing	_____	_____	_____
Combustion	_____	_____	_____
Disposal	_____	_____	_____

B. Is there any current or proposed facility at the project site for the storage, recycling, treatment or disposal of hazardous waste? ___ Yes ___ No; if yes, what is the volume (in tons or gallons per day) of the capacity:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Storage	_____	_____	_____
Recycling	_____	_____	_____
Treatment	_____	_____	_____
Disposal	_____	_____	_____

C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:

D. If the project involves demolition, do any buildings to be demolished contain asbestos?

Yes No

E. Describe the project's other solid and hazardous waste impacts (including indirect impacts):

III. Consistency

Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? Yes ___ No; if yes, attach correspondence.

See Appendix I: Correspondence.

For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources?
___ Yes No; if yes, attach correspondence

Not applicable.

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? Yes ___ No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? ___ Yes No; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? Yes ___ No; if yes, does the project involve the destruction of all or any part of such archaeological site? ___ Yes No; if yes, please describe:

SWCA Environmental Consultants identified 102 inventoried historic properties and 12 historic areas in the Study Area of the Project. One property is eligible for listing in the NRHP due to its significance to the history of electric engineering and power transmission in New England. As the Project proposed to replace existing electrical structures with similar electrical structures, the Project is unlikely to cause an effect on this historic property.

SWCA Environmental Consultants initiated consultation with the MHC by submitting a Project Notification Form, a Cultural Resources Due Diligence Report, and a State Archaeologist's permit application. Additional testing was completed in 2022. None of the sites in Massachusetts are considered significant and no further survey was recommended. See Project Narrative, Section 6.

D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

II. Impacts

Describe and assess the project's impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

As noted above, assessment of the Project's potential to adversely impact significant cultural resources is ongoing and NEP will continue to consult with the MHC to implement appropriate mitigation measures and continuing archaeological investigations.

III. Consistency

Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

NEP will coordinate with MHC such that the Project shall avoid adverse impacts to historic and/or prehistoric cultural resources to the greatest practicable extent. Should avoidance be impossible, NEP will consult with the MHC to implement appropriate mitigation measures and continuing archaeological investigations.

CLIMATE CHANGE ADAPTATION AND RESILIENCY SECTION

This section of the Environmental Notification Form (ENF) solicits information and disclosures related to climate change adaptation and resiliency, in accordance with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency (the “MEPA Interim Protocol”), effective October 1, 2021. The Interim Protocol builds on the analysis and recommendations of the 2018 Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan (SHMCAP), and incorporates the efforts of the Resilient Massachusetts Action Team (RMAT), the inter-agency steering committee responsible for implementation, monitoring, and maintenance of the SHMCAP, including the “Climate Resilience Design Standards and Guidelines” project. The RMAT team recently released the RMAT Climate Resilience Design Standards Tool, which is available [here](#).

The MEPA Interim Protocol is intended to gather project-level data in a standardized manner that will both inform the MEPA review process and assist the RMAT team in evaluating the accuracy and effectiveness of the RMAT Climate Resilience Design Standards Tool. Once this testing process is completed, the MEPA Office anticipates developing a formal Climate Change Adaptation and Resiliency Policy through a public stakeholder process. Questions about the RMAT Climate Resilience Design Standards Tool can be directed to rmat@mass.gov.

All Proponents must complete the following section, referencing as appropriate the results of the output report generated by the RMAT Climate Resilience Design Standards Tool and attached to the ENF. In completing this section, Proponents are encouraged, but not required at this time, to utilize the recommended design standards and associated Tier 1/2/3 methodologies outlined in the RMAT Climate Resilience Design Standards Tool to analyze the project design. However, Proponents are requested to respond to a [user feedback survey](#) on the RMAT website or to provide feedback to rmat@mass.gov, which will be used by the RMAT team to further refine the tool. Proponents are also encouraged to consult general guidance and best practices as described in the [RMAT Climate Resilience Design Guidelines](#).

Climate Change Adaptation and Resiliency Strategies

- I. Has the project taken measures to adapt to climate change for all of the climate parameters analyzed in the RMAT Climate Resilience Design Standards Tool (sea level rise/storm surge, extreme precipitation (urban or riverine flooding), extreme heat)? **X** Yes ___ No

Note: Climate adaptation and resiliency strategies include actions that seek to reduce vulnerability to anticipated climate risks and improve resiliency for future climate conditions. Examples of climate adaptation and resiliency strategies include flood barriers, increased stormwater infiltration, living shorelines, elevated infrastructure, increased tree canopy, etc. Projects should address any planning priorities identified by the affected municipality through the Municipal Vulnerability Preparedness (MVP) program or other planning efforts, and should consider a flexible adaptive pathways approach, an adaptation best practice that encourages design strategies that adapt over time to respond to changing climate conditions. General guidance and best practices for designing for climate risk are described in the [RMAT Climate Resilience Design Guidelines](#).

A. If no, explain why.

B. If yes, describe the measures the project will take, including identifying the planning horizon and climate data used in designing project components. If applicable, specify the return period and design storm used (e.g., 100-year, 24-hour storm).

NEP has taken steps to promote climate change adaptation and resiliency in the design of the Project. The Project will result in a more climate-ready and resilient transmission system that can

withstand more extreme weather events; address existing system capacity shortages and increased demand; and support future interconnections from renewable energy projects. In addition, NEP’s preferred solution uses substantial portions of existing ROW, thereby minimizing alteration of new land resources to construct the Project. See Project Narrative, Section 7.

C. Is the project contributing to regional adaptation strategies? Yes No; If yes, describe.

All nine municipalities have achieved MA MVP designation. All nine identified power outages as a vulnerability in their communities during Community Resilience Building workshops and associated Summary of Findings reports and sought to identify ways to improve power utility resilience. Vulnerability due to high winds, snow and ice loads, and trees were common concerns resulting in frequent and/or long duration power outages. While this project does not address local distribution, transmission line and structure replacements are intended to result in a more reliable and resilient transmission system supporting these communities.

II. Has the Proponent considered alternative locations for the project in light of climate change risks?

Yes No

A. If no, explain why.

The proposed Project location, within the existing ROW, is the only location that meets the identified Project need and reliability, addresses the various regulatory objectives, minimizes environmental impacts, and provides a cost-effective solution to customers. Also, the Project is located outside of areas identified as vulnerable to sea level rise and coastal flooding.

B. If yes, describe alternatives considered.

III. Is the project located in Land Subject to Coastal Storm Flowage (LSCSF) or Bordering Land Subject to Flooding (BLSF) as defined in the Wetlands Protection Act? Yes No

If yes, describe how/whether proposed changes to the site’s topography (including the addition of fill) will result in changes to floodwater flow paths and/or velocities that could impact adjacent properties or the functioning of the floodplain. General guidance on providing this analysis can be found in the CZM/MassDEP Coastal Wetlands Manual, available [here](#).

The Project is not located within LSCSF; however, it is within areas of BLSF. Where new access roads are proposed within BLSF, the area will be over excavated resulting in no loss of flood storage. Concrete caisson foundations are proposed within BLSF. NEP will provide compensatory flood storage as required under state and local requirements. See Project Narrative, Section 12.

ENVIRONMENTAL JUSTICE SECTION

I. Identifying Characteristics of EJ Populations

A. If an Environmental Justice (EJ) population has been identified as located in whole or in part within 5 miles of the project site, describe the characteristics of each EJ populations as identified in the EJ Maps Viewer (i.e., the census block group identification number and EJ characteristics of “Minority,” “Minority and Income,” etc.). Provide a breakdown of those EJ populations within 1 mile of the project site, and those within 5 miles of the site.

Within the designated geographic area (“DGA”) (“1-mile”), NEP identified 18 EJ Populations within five (5) municipalities, within Athol, Fitchburg, Gardner, Lancaster and Leominster. All these municipalities are located in Worcester County. Three (3) of these EJ Populations meet the EJ characteristic of “Minority and Income”, six (6) EJ Populations meet the EJ characteristic of “Minority”, and nine (9) meet the EJ characteristic of “Income”.

Within 5-miles of the Project, NEP identified 65 EJ Populations within eight (8) municipalities, within Athol, Clinton, Fitchburg, Gardner, Lancaster, Leominster, Orange and Winchendon. All municipalities are located within Worcester County except for Orange and Winchendon which are part of Franklin County. 26 of these EJ Populations meet the EJ characteristic of “Minority and Income”, 23 EJ Populations meet the characteristic of “Minority”, 15 meet the EJ characteristic of “Income”, and one (1) meets the characteristic of “Minority, Income and English Isolation”. See the table below census block group identification number and EJ characteristics.

EJ Population Characteristics 1 and 5 Miles from A1/B2 Lines¹⁸

Distance from Project	Municipality	Census Tract	Category	Minority Population %	Median Income	% Language Isolation
1 Mile	Athol	Block Group 1, Census Tract 7033	Income	3.5	\$42,292: this is 49.3 % of the MA median.	1.2
		Block Group 2, Census Tract 7031	Income	5.5	\$43,938: this is 51.2 % of the MA median.	1.8
		Block Group 1, Census Tract 7031	Income	8.4	\$35,556: this is 41.4 % of the MA median.	2.3
		Block Group 3, Census Tract 7032	Minority	33.4	0\$	0.0
5 Mile	Clinton	Block Group 3, Census Tract 7163	Minority and Income	51.3	\$46,534: this is 54.2 % of the MA median.	8.6
		Block Group 2, Census Tract 7161	Minority and Income	38.2	\$55,536: this is 64.7 % of the MA median.	0.0
		Block Group 3, Census Tract 7161	Minority	36.6	0\$	0.0
		Block Group 2, Census Tract 7162	Minority and Income	25.5	\$42,900: this is 50.0 % of the MA median.	7.8
1 Mile	Fitchburg	Block Group 2, Census Tract 7103	Minority	27.5	\$62,353: this is 72.6 % of the MA median.	1.5

¹⁸ Data was obtained from <https://www.mass.gov/info-details/massgis-data-2020-us-census-environmental-justice-populations>

5 Mile	Fitchburg	Block Group 3, Census Tract 7105	Minority and Income	35.1	\$50,163: this is 58.4 % of the MA median.	4.1
		Block Group 2, Census Tract 7105	Minority and Income	50.0	\$ 27,031: this is 31.5 % of the MA median.	4.3
		Block Group 1, Census Tract 7105	Minority and Income	51.9	\$54,931: this is 64.0 % of the MA median.	7.1
		Block Group 5, Census Tract 7106	Minority and Income	53.5	\$44,175: this is 51.5 % of the MA median.	0.0
		Block Group 3, Census Tract 7108	Minority and Income	47.1	\$28,750: this is 33.5 % of the MA median.	3.9
		Block Group 2, Census Tract 7108	Minority and Income	56.9	\$37,188: this is 43.3 % of the MA median.	0.0
		Block Group 4, Census Tract 7101	Minority and Income	53.0	\$48,227: this is 56.2 % of the MA median.	9.7
		Block Group 1, Census Tract 7104	Minority	51.7	\$56,932: this is 66.3 % of the MA median.	4.4
		Block Group 4, Census Tract 7106	Minority	58.7	\$86,168: this is 100.4 % of the MA median.	2.0
		Block Group 3, Census Tract 7106	Minority	56.8	0\$	16.3
		Block Group 2, Census Tract 7107	Minority and Income	41.0	\$18,958: this is 22.1 % of the MA median.	11.6
		Block Group 1, Census Tract 7107	Minority and Income	61.3	\$12,418: this is 14.5 % of the MA median.	17.1
		Block Group 1, Census Tract 7108	Minority	40.3	\$60,313: this is 70.3 % of the MA median.	15.3
		Block Group 2, Census Tract 7106	Minority	57.6	\$80,526: this is 93.8 % of the MA median.	11.1
		Block Group 3, Census Tract 7110	Minority	54.2	0\$	3.8
		Block Group 2, Census Tract 7110	Minority and Income	35.1	\$49,517: this is 57.7 % of the MA median.	3.8
		Block Group 1, Census Tract 7110	Income	14.8	\$51406: this is 59.9 % of the MA median.	0.0
		Block Group 1, Census Tract 7101	Minority	46.8	\$75,714: this is 88.2 % of the MA median.	8.2
		Block Group 3, Census Tract 7101	Minority	42.4	\$63,433: this is 73.9 % of the MA median.	1.5
		Block Group 1, Census Tract 7106	Minority and Income	52.3	\$39,045: this is 45.5 % of the MA median.	2.8
		Block Group 4, Census Tract 7102	Minority and Income	34.8	\$55,160: this is 64.3 % of the MA median.	3.4
		Block Group 2, Census Tract 7101	Minority and Income	71.7	\$41,800: this is 48.7 % of the MA median.	0.0
Block Group 1, Census Tract 7102	Minority	30.8	\$90,078: this is 104.9 % of the MA median.	12.6		
Block Group 2, Census Tract 7102	Minority	25.7	\$68,818: this is 80.2 % of the MA median.	3.10		
1 Mile	Gardner	Block Group 1, Census Tract 7075	Income	13.9	\$56,023: this is 65.3 % of the MA median.	4.7
		Block Group 2, Census Tract 7075	Minority	32.9	\$63,401: this is 73.9 % of the MA median.	1.6
		Block Group 3, Census Tract 7075	Minority	34.3	\$80,221: this is 93.5 % of the MA median.	0.0

		Block Group 1, Census Tract 7072	Income	18.4	\$32,746: this is 38.1 % of the MA median.	4.9
		Block Group 1, Census Tract 7071	Income	0.6	\$41,397: this is 48.2 % of the MA median.	1.3
		Block Group 3, Census Tract 7073	Minority and Income	40.4	\$40,486: this is 47.2 % of the MA median.	0.0
		Block Group 2, Census Tract 7074	Income	17.5	\$51,635: this is 60.2 % of the MA median.	0.0
		Block Group 1, Census Tract 7073	Income	21.4	\$42,608: this is 49.6 % of the MA median.	3.9
		Block Group 2, Census Tract 7073	Income	14.3	\$45,188: this is 52.6 % of the MA median.	1.2
5 Mile	Gardner	Block Group 2, Census Tract 7071	Income	23.8	\$32,390: this is 37.7 % of the MA median.	1.5
1 Mile	Lancaster	Block Group 4, Census Tract 7131	Minority	29.6	\$95,278: this is 111.0 % of the MA median.	0.0

1 Mile	Leominster	Block Group 2, Census Tract 7092.02	Minority and Income	40.4	\$44,659: this is 52.0 % of the MA median.	10.1
		Block Group 3, Census Tract 7092.01	Minority and Income	30.3	\$55,938: this is 65.2 % of the MA median.	2.8
		Block Group 1, Census Tract 7092.02	Minority	32.6	\$59,896: this is 69.8 % of the MA median.	6.8
5 Mile	Leominster	Block Group 2, Census Tract 7092.01	Minority	31.4	\$62,802: this is 73.2 % of the MA median.	0.0
		Block Group 3, Census Tract 7095.02	Minority and Income	38.4	\$54840: this is 63.9 % of the MA median.	0.0
		Block Group 3, Census Tract 7092.01	Minority and Income	30.3	\$55,938: this is 65.2 % of the MA median.	2.8
		Block Group 1, Census Tract 7097.01	Minority, Income and English Isolation	50.6	\$41,506: this is 48.4% of the MA median.	31.8
		Block Group 2, Census Tract 7097.01	Minority	58.9	\$62,551: this is 72.9 % of the MA median.	22.7
		Block Group 2, Census Tract 7095.02	Minority	30.3	\$95,524: this is 111.3 % of the MA median.	2.1
		Block Group 3, Census Tract 7096	Minority and Income	55.6	\$44,554: this is 51.9 % of the MA median.	10.8
		Block Group 1, Census Tract 7096	Minority	33.8	\$70,000: this is 81.5 % of the MA median.	15.5
		Block Group 1, Census Tract 7094	Minority and Income	38.7	\$22907: this is 26.7 % of the MA median.	19.5
		Block Group 1, Census Tract 7095.02	Minority	36.8	\$84,188: this is 98.1 % of the MA median.	0.0
		Block Group 3, Census Tract 7091	Minority and Income	47.7	\$47,934: this is 55.8 % of the MA median.	6.7
Block Group 3, Census Tract 7092.02	Minority and Income	44.5	\$35,500: this is 41.5 % of the MA median.	6.5		

		Block Group 2, Census Tract 7094	Minority and Income	37.0	\$52,140: this is 60.7 % of the MA median.	6.8
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5 Mile	Orange	Block Group 1, Census Tract 405.01	Income	5.6	\$50,35: this is 58.8 % of the MA median.	0.0
		Block Group 3, Census Tract 405.02	Income	7.6	\$28,692: this is 33.4 % of the MA median.	0.0
		Block Group 2, Census Tract 405.01	Income	7.2	\$49,805: this is 58.0 % of the MA median.	0.0
5 Mile	Winchendon	Block Group 3, Census Tract 7011	Minority	24.9	\$97,803: this is 114 % of the MA median.	0.0
		Block Group 2, Census Tract 7011	Income	14.5	\$38,542: this is 44.9 % of the MA median.	0.0

- B. Identify all languages identified in the “Languages Spoken in Massachusetts” tab of the EJ Maps Viewer as spoken by 5 percent or more of the EJ population who also identify as not speaking English “very well.” The languages should be identified for each census tract located in whole or in part within 1 mile and 5 miles of the project site, regardless of whether such census tract contains any designated EJ populations.

See the table below for all identified Census Tracts within 5 miles of the Project that have at least 5% of the Census Tract who do not speak English well. Spanish or Spanish Creole was identified as the Primary Language by 11 Census Tracts in three (3) municipalities.

Languages Spoken by at least 5% of the Census Tract Population¹⁹

Distance from Project	EJ or Non-EJ Populations	Municipality	Census Tract	Language Spoken
5 Mile	EJ and Non-EJ	Clinton	7162	Spanish or Spanish Creole: 5.7%
5 Mile	EJ	Fitchburg	7105	Spanish or Spanish Creole: 10.2%
			7106	Spanish or Spanish Creole: 9.2%
			7108	Spanish or Spanish Creole: 9.2%
			7101	Spanish or Spanish Creole: 8.6%
			7107	Spanish or Spanish Creole: 13.9%
5 Mile	EJ and Non-EJ	Fitchburg	7104	Spanish or Spanish Creole: 5.7%
1 Mile	EJ	Leominster	7092.02	Spanish or Spanish Creole: 7.7%
5 Mile	EJ and Non-EJ	Leominster	7096	Spanish or Spanish Creole: 10.1%
			7097.01	Spanish or Spanish Creole: 6.6%
5 Mile	EJ and Non-EJ	Leominster	7094	Spanish or Spanish Creole: 11.6%

¹⁹Data for languages spoken was obtained from the American Community Survey 2011-2015 5-year estimates, Table B16001.

- C. If the list of languages identified under Section I.B. has been modified with approval of the EEA EJ Director, provide a list of approved languages that the project will use to provide public involvement opportunities during the course of MEPA review. If the list has been expanded by the Proponent (without input from the EEA EJ Director), provide a list of the additional languages that will be used to provide public involvement opportunities during the course of MEPA review as required by Part II of the MEPA Public Involvement Protocol for Environmental Justice Populations (“MEPA EJ Public Involvement Protocol”). If the project is exempt from Part II of the protocol, please specify.

Not applicable.

II. Potential Effects on EJ Populations

- A. If an EJ population has been identified using the EJ Maps Viewer within 1 mile of the project site, describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

The Project will occur within the existing ROW, thereby minimizing adverse environmental impacts. Due to the nature of the Project, outage constraints in the region, and NEP’s efforts to reduce impacts to the natural and human environment, Project activities will be sequenced in both the mainline and tap lines. No long-term impacts on soil, bedrock, vegetation, surface water, groundwater, wetland resources or air quality will occur.

Short-term impacts related to construction are anticipated; however, through best management practices there are no anticipated adverse effects on the identified EJ populations. Refer to Section 8.3.1.1 for the anticipated temporary impacts on Air Quality, Water Quality, Land Protection and Open Space, Noise, and Traffic and the proposed mitigation.

- B. If an EJ population has been identified using the EJ Maps Viewer within 5 miles of the project site, will the project: (i) meet or exceed MEPA review thresholds under 301 CMR 11.03(8)(a)-(b) Yes No; or (ii) generate 150 or more new average daily trips (adt) of diesel vehicle traffic, excluding public transit trips, over a duration of 1 year or more. Yes No
- C. If you answered “Yes” to either question in Section II.B., describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

Not applicable.

III. Public Involvement Activities

- A. Provide a description of activities conducted prior to filing to promote public involvement by EJ populations, in accordance with Part II of the MEPA EJ Public Involvement Protocol. In particular:
1. If advance notification was provided under Part II.A., attach a copy of the Environmental Justice Screening Form and provide list of CBOs/tribes contacted (with dates). Copies of email correspondence can be attached in lieu of a separate list.

Refer to Appendix H.

2. State how CBOs and tribes were informed of ways to request a community meeting, and if any meeting was requested. If public meetings were held, describe any issues of concern that were raised at such meetings, and any steps taken (including modifications to the project design) to address such concerns.

Per 301 CMR 11.05(4), Advance Notification of the Project was sent via electronic mail on June 14, 2022 by BSC to all contacts on the EJ Reference List, provided by the MEPA Office on February 23, 2022.

The Advance Notification consisted of the EJ Screening Form, as provided by the MEPA Office in the Public Involvement Protocol; a copy is provided in Appendix H. Efforts were made to ensure that language in the EJ Screening Form was understandable to the reader; that is, “technical” language was replaced with layperson terms, and legalese was omitted to the extent feasible.

NEP has undertaken measures to incorporate community involvement into the MEPA process. These community engagement strategies were determined based upon existing NEP stakeholder outreach methods and community engagement strategies provided in the Public Involvement Protocol. These involvement methods were discussed and supported by the MEPA Office during a Pre-Filing Consultation held on April 7, 2022.

A public website (“www.newenglandA1B2.com”), available in Spanish and English, is available which provides details of the Project, an interactive mapper, and contact information. This website address was also provided on the EJ Screening Form along with a contact number to request information or public meetings. Additionally, NEP hosted a virtual public meeting on July 11, 2022; information pertaining to this meeting was advertised in the Athol Daily News, Sentinel & Enterprise (Fitchburg and Leominster), Gardner Magazine and The Gardner News, Winchendon Recorder, Worcester Telegram & Gazette, and the Greenfield Recorder, and was also provided to the EJ Reference list via electronic mail and to the abutters of the A1/B2 Lines within EJ Populations via mail, see Appendix H. NEP contacted the town identified that fell within the 5% or more category to ensure that the languages spoken were not limited to Spanish. Given this information, the EJ Screening Form, meeting invitation and meeting invitation advertisement were translated into Spanish. Interpretation services were provided at the public meeting. For anyone who may have additional queries about the project an email address (“info@newenglandA1B2.com”) has been provided to reach out with their concerns.

No issues were raised during the virtual public meeting.

3. If the project is exempt from Part II of the protocol, please specify.

Not applicable.

- B. Provide below (or attach) a distribution list (if different from the list in Section III.A. above) of CBOs and tribes, or other individuals or entities the Proponent intends to maintain for the notice of the MEPA Site Visit and circulation of other materials and notices during the course of MEPA review.

Refer to Appendix H.

- C. Describe (or submit as a separate document) the Proponent's plan to maintain the same level of community engagement throughout the MEPA review process, as conducted prior to filing.

NEP will maintain the distribution list of contacts from the EJ Reference List and any additional contacts that are identified during the virtual meetings and public engagement process. Contacts will receive notifications of the MEPA site visit, summaries of supplemental information submitted to the MEPA office and any other relevant notices or materials issued during the course of the MEPA review. NEP will continue to host a project website, which is available in Spanish. Repositories for hard copies of Project materials have been established at public libraries within each of the nine (9) municipalities within the Project Site in the Commonwealth of Massachusetts, which will be updated regularly as additional Project documents become available.

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

(Name) Athol Daily News, Greenfield Recorder; Sentinel and Enterprise; Gardner News; Worcester Telegram and Gazette; The Item (Date) 9/9/2022 (All in same date)

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:



Date Signature of Responsible Officer Date Signature of person preparing or Proponent ENF (if different from above)

Mike Tyrell

Heidi Graf

Name (print or type)

Name (print or type)

New England Power Company (NEP)

BSC Group Inc.

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1.0 PROJECT OVERVIEW AND SUMMARY

1.1 INTRODUCTION

New England Power Company (“NEP”) is proposing a refurbishment of the A1 and B2 69 kilovolt (“kV”) double circuit overhead electrical utility lines (“A1/B2 Lines” or “the Lines”). The A1/B2 Lines are located within an existing Right-of-Way (“ROW”) corridor which begins at Vernon #12 Switchyard in Vernon, Vermont, crosses through a portion of New Hampshire (“NH”), enters Massachusetts (“MA”) in Warwick, and terminates at the Pratts Junction #225 Substation located in Sterling (refer to Figure 1 below). *Table 1* summarizes the approximate mileage of the entire A1/B2 ROW in each state.

Table 1: A1/B2 Lines by State

State	Municipality	Approx. Mileage
Vermont	Vernon	2.5
New Hampshire	Hinsdale and Winchester	4
Massachusetts	Warwick, Royalston, Winchendon, Gardner, Westminister, Fitchburg, Leominster, Athol and Sterling	54
		Approx. Total – 60.5

In MA, the A1/B2 Asset Condition Refurbishment Project (“A1/B2 ACR” or “the Project”) includes the complete refurbishment of the existing A1/B2 Lines, also referred to as the “mainline”, and three (3) intersecting tap lines.

1.2 PROJECT NAME AND PROPONENT

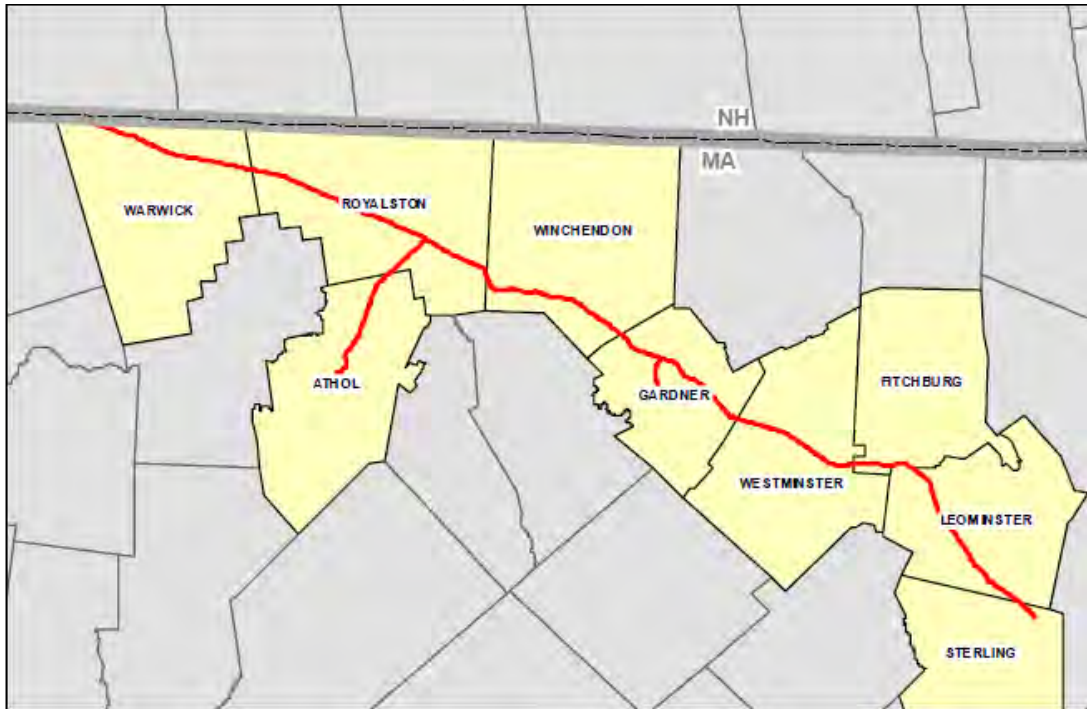
Project Name: A1/B2 Asset Condition Refurbishment Project in Massachusetts (“A1/B2 ACR Project”, the “Project” or “A1/B2 ACR”)

Project Proponent: New England Power Company (“NEP” or “the Proponent”)

1.3 PROJECT LOCATION

All Project activities in MA will be located within the municipalities of Warwick, Royalston, Athol, Winchendon, Gardner, Westminister, Fitchburg, Leominster, and Sterling. Refer to the provided Environmental Resources Map in *Appendix A*. The Project ROW is generally oriented northwest-to-southeast from Warwick to Sterling, MA. The existing A1/B2 mainline consists of two (2) 69 kV overhead electric transmission lines (“wires”) that are supported primarily on lattice towers (“structures”). The existing 69 kV tap lines consist of the existing Athol Taps 1 and 2 in Athol and Royalston, the existing Crystal Lake Tap in Gardener, and the existing East Westminister Tap in Westminister. Tap lines are comprised of wood pole structures.

Figure 1: Project Route



The A1/B2 ROW is generally 100-ft in easement width. However, in Sterling and Leominster, the A1/B2 Lines are co-located with the I135S/J136S Lines and the ROW is wider in these locations to accommodate required clearances, see *Appendix A: MEPA General Purpose Plans*. Along the Athol Tap Lines, the ROW is generally 125ft wide and the Crystal Lake Tap Line ROW is generally 100-ft wide. The East Westminster Tap is a two (2) structure Tap line located within the A1/B2 ROW. The Project ROW¹ is generally comprised of moderately level terrain, as well as steeply sloping river terraces and cliffs. Most of the upland within the maintained portion of the ROW consists of a closed-scrub and open heath communities interspersed with a herbaceous pioneering community. Where undeveloped, the vegetative community occupying the edge of the ROW is best characterized as typical southern New England transitional upland forest and forested wetland.

Adjacent land uses include agricultural, recreational, as well as commercial and residential development. The ROW crosses multiple reservoirs, rivers, ponds, as well as numerous streams and wetland systems in MA. Throughout the Project ROW there is some variation in drainage patterns, with shallow to bedrock areas creating a steep hydrologic gradient resulting with slope discharge wetland systems, but the ROW generally drains toward wetlands and streams located in the low-lying topography producing classic toe-of-slope wetlands along the Project route.

1.4 PROJECT NEED AND BENEFITS

Project Need: The A1/B2 Lines were originally constructed in 1909 and the original lattice structures remain. The Lines were reconductored in the 1920s and were reinsulated in 2004. The existing structures and wires are in need of replacement due to asset condition and aging infrastructure. In addition, the access conditions vary considerably throughout the ROW. Existing access is present in some areas, but in others,

¹ Henceforth, Project ROW refers to the Mainline and Tap Line ROWs, unless otherwise noted.

the historic access route is in need of significant repair and does not meet NEP's standard to safely support specialized equipment. As such, the Project's primary objective is to complete the required system improvements to address the poor asset condition, mitigate potential risks of electrical failure, and to provide long-term reliable delivery of electrical service and maintenance of the line. As part of the proposed refurbishment, fiber optic ground wires will replace the existing shield wire to provide high speed communications between substations.

Secondarily, the initial results of the Independent System Operator – New England ("ISO-NE") 2050 Transmission Study ("Study") support upgrading the line to 115 kV. Since the Project proposes a complete refurbishment, all new or replacement structures will be constructed at a 115 kV capacity but operated at 69 kV. Based on current Study assumptions and forecasts, renewable energy connections and customer needs will ultimately require the system to operate at the higher voltage at some point in the future. In an effort to reduce the impacts of a large-scale refurbishment on the environment, the community and its customers, NEP proposes to "future proof" the A1/B2 Lines as part of this Project constructing lines with 115 kV capacity but operating the lines at 69 kV until the additional capacity is needed.

Project Benefits: The Project will improve transmission system infrastructure and comply with comprehensive regional plans for improving electric transmission reliability in New England. Benefits of the Project include the following:

- Increased resiliency of the mainline and tap lines. By installing improved foundations, more robust structures with improved lightning protection, and higher strength conductor and OPGW, the proposed infrastructure will be better suited to withstand strong winds and storm events.
- The new overhead lines will be larger in capacity and size which will allow more electricity to flow during times of high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change.
- The installation of OPGW will allow better communication between substations, resulting in improved response time during storm-related emergencies and outages, which will increase public safety.
- Designing for future needs reduces the frequency of disturbance to wetland resource areas, rare species habitat and adjacent landowners over time by reducing the likelihood of multiple repeat projects, thereby reducing environmental impacts and costs to NEP's customers.
- The comprehensive refurbishment will have the added benefit of allowing more renewable energy resources to connect into the system. Addressing the climate change crisis requires a major expansion of renewable energy and the infrastructure necessary to support and deliver that energy. NEP is actively taking steps to ensure that its system is ready to meet this critical challenge, and refurbishing aging infrastructure helps to accomplish this goal. Although the operation on the Line will remain at 69 kV for the foreseeable future, the 115 kV capacity proposed for the Project can support higher volumes of renewable energy resources in the future.

1.5 PROJECT DESCRIPTION

The Project includes various refurbishment activities and system improvements for 711 structures and the installation of six (6) new vertical jumper switch structures along the mainline and tap lines in MA. Activities will occur within an existing ROW and all efforts will be made to minimize the need for construction activities outside the easement. Access improvements or re-establishment and construction of new access, including vegetation removal, will be required to accommodate the proposed infrastructure. The full extent of the Project is shown in *Appendix A*.

To address the poor asset condition, The Project proposes the following activities:

- Replacement of 711 structures which will entail removing the existing structure and installing a replacement structure in an adjacent location. Based on the current Project design, it is anticipated 305 of the replacement structures will be on concrete caisson foundation, due to tension on the structure. The remaining 406 will be directly embedded into the ground and will not require caisson foundations.
- Installation of six (6) new direct embed vertical jumper switch structures along the tap lines.
- Reconductoring of all circuits with 795 Aluminum-conductor steel-supported conductor (“ACSS”) and replacing existing shield wire with two (2) OPGWs. In certain situations where a replacement structure is proposed 25-ft or more from the existing structure, a temporary structure will be installed to facilitate the new structure, conductor and OPGW installations. Additionally, in approximately 30 locations, temporary structures may be required to increase the height of the conductor during construction so that construction vehicles and “live line” work (construction activities conducted while the overhead lines are energized) can occur at a safe distance from the conductor. The temporary structures will then be removed along with the existing structure.
- Realignment of approximately 5.2 miles of the A1/B2 mainline, where there is sufficient space to accommodate longer spans and fewer structures, as well as safer and more efficient construction methodologies. In this location, the mainline will be shifted approximately 41.5 ft north towards the existing I135S/J136S Lines.
- Vegetation removal to obtain a minimum horizontal clearance of 30-ft to the edge of ROW/easement under all weather conditions. On average, the existing cleared ROW is 85-ft, with the minimum cleared width being 75-ft and the maximum approximately 100-ft. The Project proposes clearing to 100-ft on the mainline and Crystal Lake Tap Line, and 125 ft on the Athol Tap Line to obtain the necessary horizontal clearance requirements.
- Construction of new and/or re-establishment of existing access roads to provide safe access for construction and the future operation and maintenance of the lines. Vegetation mowing on the ROW and tree removals will be required to accommodate construction access. Where necessary, grading and stormwater BMPs may be required to control runoff and mitigate erosion of the constructed access roads.

Additionally, due to outage constraints in the region, Project construction activities will be generally sequenced as follows:

- Vegetation Management
- Access road re-establishment/improvement
- Matting Installation
- Foundation Installation
- Installation of Pole Bases
- Installation of Pole Tops and Arms
- Installation of new conductor and OPGW on the A1 circuit
- Pulling of new conductor and OPGW on the B2 circuit
- Removal of existing structures
- Removal of temporary structures.
- ROW restoration where required

1.6 PROPOSED CONDITIONS

1.6.1. Structures

The existing Project ROW is currently used for utility activities, including existing utility structures, access roads, and active vegetation management. Structure improvements consist of replacing wood and steel

suspension structures with direct embedded engineered steel structures. Wood and steel deadend structures will be replaced with engineered steel structures on larger caisson foundations. All new and/or replacement structures will be constructed at a 115 kV capacity and operated at 69 kV until customer needs dictate the system operate at a higher voltage.

All lines will be reconducted with 795 thousand circular mils (“kcm”) ACSS 26/7 Drake conductor. The replacement and new structure height for the mainline and tap lines is approximately 93-ft above ground (110-ft direct embed structure), which is approximately twice as tall as the existing structures standing at 51-ft and 45-ft, respectively. Due to the outage constraints associated with the A1/B2 Lines, construction will occur with energized lines and utilize live line construction techniques. As such, the proposed replacement structures must be installed at a height above the existing structures that ensures worker and equipment safety.

The overhead structures currently support conductors in a triangular configuration along with one (1) shield wire at the top of the structure. The existing shield wire, which functions as lightning protection, will be replaced with two OPGWs to provide grounding and support high-speed relay and system communication requirements. This includes two (2) OPGW to be installed between the Vernon No. 12 Switchyard in Vernon, VT, and the Pratts Junction No. 225 Substation in Sterling, MA. Similarly, for the tap lines, OPGW will be installed from the Athol Tap Line to the Chestnut Hill No. 702 Substation and from the A1/B2 mainline to the Crystal Lake No. 607 Substation.

In East Westminster, the two (2) single span tap lines will be replaced with engineered steel H-Frame terminal structures on caisson foundations and reconducted with 795 kcm ACSS 26/7 Drake conductor. Six (6) new steel pole vertical jumper switch structures are proposed to be installed, one (1) in Winchendon and five (5) in Westminster. Due to the topographic constraints on the Athol Tap Line, the engineering team is evaluating the viability of installing new structures within the ROW. Reconfiguration of the existing structures may be necessary to facilitate the necessary upgrades.

1.6.2 Limit of Disturbance

Construction activities and materials will be confined to the Limit of Disturbance (LOD) as shown on the MEPA General Purpose Plans in *Appendix A*. The LOD zone represents the additional work area beyond the limits of grading which is also shown on the MEPA General Purpose Plans in *Appendix A*. Within the LOD, equipment access, the placement of temporary BMPs, soil stockpiling and equipment maneuvering is anticipated. In addition, where applicable, tree removals are preliminarily assumed within the LOD zone due to the anticipated secondary impacts from grading activities. Temporary construction matting is assumed to be utilized where access is necessary in wetlands. NEP is working toward solutions to reduce the extent of the LOD throughout the Project ROW. NEP will coordinate with landowners as necessary for temporary construction access as the plans are refined.

1.6.3. Vegetation Management

To provide a safe area for construction, future maintenance, and operation, and to ensure the reliability of the proposed lines, vegetation on the existing ROW will continue to be maintained to prevent the growth of tall woody species. In addition, to obtain the minimum horizontal clearance of 30-ft to the edge of ROW under all weather conditions, the existing cleared portion of the ROW will need to be expanded, as necessary. The existing maintained ROW on the mainline, the Crystal Lake Tap Line and the Athol Tap Line is roughly 85-ft, 75-ft, and 100-ft, respectively. To provide the necessary clearances for the replacement and new structures, the mainline and Crystal Lake Tap ROWs will be cleared to 100-ft, and the Athol Tap ROW will be cleared to 125-ft. Following the completion of construction, maintenance

activities will be consistent with the Five-Year Vegetation Management Plan (“VMP”) (2019-2023), and subsequent approved plans, presented in *Appendix D*.

1.6.4 Access Routes, Work Pads and Envelopes, and Pull Pads

1.6.4.1 Access Road Routes

Efforts were made during planning and design to align access with previously utilized roads or pathways along and adjacent to the ROW where feasible. Being among NEP’s oldest assets, access conditions vary considerably throughout the ROW, in many cases, historic access roads/paths will require significant improvement to meet the access requirements for the Project. These roads are categorized as either “Standard Road Type 1-2” or “Designed Road Type 3-5” which includes the refurbishment of an existing access road, and Designed Road Type 3-5, which ranges from an entirely new road to a complete reconstruction of an existing access road. Unless otherwise noted on the MEPA General Purpose Plans presented in *Appendix A*, work pads/envelopes and pull pads will be graded and stoned as necessary to establish a level access.

Where existing access does not exist along the ROW, new access is proposed and categorized as either Standard Road Type 1-2 or Designed Road Type 3-5. New access in upland areas is assumed to include import, placement, and compaction of gravel to create a new road to access structures for construction. Standard Road Type 1-2, access roads include upland areas where the terrain is relatively level and will not require significant cut/fill to construct. In these areas, if required, soft surface material (e.g., topsoil) will be stripped and replaced with suitable gravel to provide a stable road base. If existing surface material is suitable as a base (e.g., sand/gravel), imported gravel will be placed without stripping existing surface material. Standard access roads may include stormwater Best Management Practices (“BMPs”) to control runoff and mitigate erosion of the constructed access roads.

Designed Road Type 3-5, access roads are proposed where the existing terrain is steeper and will in-turn require additional cut/fill to construct. The limit of cut/fill associated with designed access roads is shown on the attached MEPA General Purpose Plans in *Appendix A*. In addition, designed roads include stormwater BMPs to control runoff and mitigate erosion of the constructed roads and/or adjacent slopes.

Stormwater BMPs such as swales, stone check dams, water bars, or other similar measures will be installed as necessary based on the access road design. These measures are intended to reduce adverse impacts from stormwater flows, maintain the longevity of the roads, and reduce overall maintenance needs. New access roads were sited within the existing ROW easement to the extent feasible; however, due to existing site constraints (e.g., steep slopes, rocky outcrops, proximity to wetland resource areas), some access routes are sited beyond the existing easement boundaries see MEPA General Purpose Plans in *Appendix A*. All new access roads (including those which extend beyond the existing easement) will be maintained by NEP.

1.6.4.2 Work Pads/Envelopes and Pull Pads

Work envelopes will be placed at all structures where work is proposed. Pull pads are required where reconductoring and OPGW pulling activities are proposed (see *Appendix A: MEPA General Purpose Plans*). Within wetlands and agricultural fields, construction matting will be utilized to provide a safe work area. In the remaining upland work areas, stone work pads will be constructed. In general, the work envelopes have been designed to be up to approximately 157-ft by 80 to 100-ft depending on the width of the ROW and extent of grading required to create the level work area and provide adequate space for the typical live line construction associated with the Project’s scope of work. Similarly, pull pads may require grading or temporary construction mats in specific locations to support pulling of conductors and/or OPGW.

Work envelopes will be constructed to provide a stable and safe work area to conduct the proposed Project. Permanent work pad construction is proposed predominantly in upland areas (i.e., beyond the limits of Bordering Vegetated Wetland “BVW”). Given the steep and rocky terrain to effectively establish work envelopes at several of the structures extensive grading and establishment of retaining walls will be required in select locations. As shown in *Appendix A*, temporary work envelopes formed from construction matting will be utilized to the maximum extent practicable in wetland resource areas.

1.6.4.3 Retaining Walls

The majority of the proposed access road improvements, temporary pulling pads, and permanent gravel work pads will be constructed by cutting and/or filling existing grade as required to meet the design grade. However, there are several field conditions identified during design that warrant use of a retaining wall. The current design proposes retaining walls in the municipalities of Winchester, Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Athol (See MEPA General Purpose Plans on *Appendix A*). These walls are proposed to protect existing structures and/or features, as well as adjacent wetland resource areas, in areas where permanent work pads are required. Similarly, retaining walls are proposed along the limits of the ROW in areas where surface grading would encroach on abutting properties. This is especially critical in areas of state forests and other recreational lands.

The following types of retaining wall were considered to be appropriate for use on this Project. During construction, a retaining wall type will be selected based on local geotechnical conditions and other site constraints.

- Gabion Basket Retaining Wall (permanent installation)
- Large Block Gravity Retaining Wall (permanent installation)
- Mechanically Stabilized Earth (“MSE”) Retaining Wall (permanent installation)
- Sheet Pile Retaining Wall (temporary/permanent installation)
- Construction Mat Retaining Wall (temporary installation)

1.7 SUMMARY OF IMPACTS

Table 2: Summary of A1/B2 Transmission Lines Refurbishment Impacts presents an overview of the impacts anticipated to result from the Project. As an active ROW, the Project area is already disturbed and maintained.

Table 2: Summary of A1/B2 Transmission Lines Refurbishment Impacts²

Resource Area	Temporary Impacts	Permanent Impacts ³
New Land Altered: <i>See Section 3: Land Use</i>	No temporary impacts	Total permanent impact – approximately 216 acres <ul style="list-style-type: none"> • <i>Tree removal approximately 164 acres</i> • <i>New/improved access approximately 52 acres⁴</i>

² Note that impacts located within the limits of Riverfront Area overlap with impacts to BLSF, BVW, and the 100-foot Buffer Zone. Therefore, the total impacts to the Project Site are not equal to the sum of alterations.

³ Work envelopes will consist of temporary construction matting within BVW and BLSF and will consist of gravel elsewhere. Where BVW and BLSF overlap with Riverfront Area, these impacts will be temporary; otherwise, work envelope construction will be permanent.

⁴ Calculated at a 12-ft wide travel lane.

Resource Area	Temporary Impacts	Permanent Impacts ³
Bordering Vegetated Wetland (“BVW”) See Section 4: Wetlands and Wildlife	Total Temporary – <i>approximately 2,200,651 sf (51 acres)</i> ⁵ <ul style="list-style-type: none"> • <i>Construction mats for access roads where BVW crossings could not be avoided.</i> • <i>Construction mats for construction work envelopes and pull pad work envelopes that overlap with BVW.</i> • <i>Construction mats within Limit of Disturbance only</i>⁶ 	Total Permanent – <i>approximately 667,928 sf (15 acres)</i> <ul style="list-style-type: none"> • <i>Fill for replacement structure foundations in BVW</i> • <i>Tree removal will result in conversion of PFO to PSS</i>
Other Wetland Resource Areas See Section 4: Wetlands and Wildlife		
Inland Bank (“Bank”)	Total Temporary – <i>approximately 67,954 sf</i> <ul style="list-style-type: none"> • <i>Construction mats where access roads cross Bank.</i>⁷ 	Total Permanent – <i>approximately 26,572 sf</i> <ul style="list-style-type: none"> • <i>Selective tree pruning over portions of Bank that are currently forested.</i>⁸
Riverfront Area (“RA”)	Total Temporary – <i>approximately 513,137 sf (12 acres)</i> <ul style="list-style-type: none"> • <i>Approved VMP activities only (mowing)</i> • <i>Construction mats for access roads, work pads and pull pad envelopes where RA overlaps with BVW, residential lawn or agricultural land.</i> 	Total Permanent— <i>approximately 2,101,679 sf (48 acres)</i> <ul style="list-style-type: none"> • <i>New/or replacement structure foundations</i> • <i>Cut/fill for access roads, work envelopes, pull pads and retaining walls as identified on the MEPA General Purpose Plans</i> • <i>New/improved access roads</i> • <i>Stabilization material in improved/expanded sections of existing access roads.</i> • <i>Tree removal</i>
Bordering Land Subject to Flooding (“BLSF”)⁹	Total Temporary— <i>approximately 13,939 sf</i> <ul style="list-style-type: none"> • <i>Approved VMP activities only (mowing)</i> • <i>Construction mats for access roads, work pads and pull pad envelopes where BLFS overlaps with residential lawn or agricultural land.</i> 	Total Permanent— <i>approximately: 389,517 sf and 76.6 cubic yards (“cy”) fill</i> <ul style="list-style-type: none"> • <i>Fill for structure foundations</i> • <i>Cut/fill for work envelopes, pull pads and access roads. Areas will be over-excavated so that no loss in flood storage occurs.</i> • <i>Tree removal</i>

5 Approximately 122 acres of BVW total in Project.

6 20-ft Limit of Disturbance is utilized for Project impacts as described above, except where retaining walls are constructed and the Limit of Disturbance is 10-ft.

7 In most cases, construction mat crossing will span the Bank of rivers and stream; however, the potential for alteration has been accounted for in the Project impact calculations.

8 Includes canopy removal for vegetation clearance for the overhead line and tree removals within the Limit of Disturbance

9 as identified on the MEPA General Purpose Plans. Work areas will be graded such that no flood storage is displaced. (~293,924 sf)

Resource Area	Temporary Impacts	Permanent Impacts³
Land Under Water (“LUW”)	Total Temporary– <i>approximately 32,206 sf</i> <ul style="list-style-type: none"> • <i>Construction mats for access roads, work pads and pull pad envelopes where spanning open water was not feasible.</i> 	Total Permanent – <i>approximately 158 sf</i> <ul style="list-style-type: none"> • <i>Fill for two (2) new/or replacement structure foundations</i>
Isolated Wetland	Total Temporary – <i>approximately 73,181 sf (~1 acres)</i> <ul style="list-style-type: none"> • <i>Approved VMP activities only (mowing)</i> • <i>Construction mats for access roads, work envelopes, and pull pad work envelopes that overlap with Isolated Wetlands.</i> 	Total Permanent - <i>approximately 11,840 sf</i> <ul style="list-style-type: none"> • <i>Fill for new/or replacement structure foundations in Isolated Wetlands</i> • <i>Tree removal will result in conversion of PFO to PSS.</i>
Resource Area	Impacts	
Waterways	Two (2) concrete foundations are proposed within a waterway along the Crystal Lake Tap in Gardner, MA. Temporary and permanent impacts to LUW are anticipated, see above. Waterways crossings do not involve structures within the waterways, and they will be designed to allow unimpeded access by foreseeable watercraft. No adverse impacts are anticipated from waterways crossings.	
Rare Species Impacts <i>See Section 5: Rare Species</i>	Rare Species may have potential impacts where construction-related activities occur within designated habitat. A “take” has the potential to occur due to road improvement activities; consultations with Natural Heritage and Endangered Species Program (“NHESP”) are in progress to identify areas of concern, and to identify appropriate avoidance measures, which will be implemented, as required.	
Historical/ Archaeological Impacts <i>See Section 6: Historic and Archaeological Resources</i>	Historical/ Archaeological areas may have potential impacts where construction-related activities occur within areas of high archaeological sensitivity. Surveys are ongoing by SWCA Environmental Consultants to identify areas of concern, and to identify appropriate avoidance measures, which will be implemented, as required.	

1.8 SUMMARY OF MITIGATION

NEP follows a set of policies for ROW access, maintenance, and construction BMPs. By consistently implementing these procedures, NEP ensures that transmission lines are maintained and constructed by trained personnel in a manner that minimizes potential impacts to the environment, adheres to permit conditions, and meets industry standards. Key elements of the construction policy include pre-construction field investigations, field inspections during construction, and post-construction inspections.

Throughout construction, appropriate consideration will be given to Project implementation in a manner consistent with conditions of permits/authorizations and approved mitigation measures. (*See Section 12 and*

Appendix C). To minimize Project impacts, NEP has incorporated the following actions and considerations throughout the planning and design phases:

Several asset condition and reliability needs were combined into one Project scope in an effort to reduce the need for repeat disturbances to wetlands, other environmental resource areas and adjacent property owners in this shared ROW:

- Existing ROW and access roads are being used to avoid new land disturbance, where feasible;
- Field investigations were completed to assess constructability and avoid/mitigate sensitive resources;
- Agency consultations are in progress;
- Replacement structures are being located outside of BVW where feasible;
- Temporary construction mat BMPs will be utilized to minimize wetland impacts; and
- Work areas within wetlands will be temporary only; no permanent fill within wetlands is proposed for access, work envelopes or pull pads.

Additional mitigation measures are discussed in *Sections 3 through 11* of this Project Narrative and summarized in *Section 12: Mitigation Overview and Section 61 Findings*. Additional mitigation measures will be implemented as required by state, federal and local requirements. NEP anticipates that the final mitigation package will be developed during the federal, state and local permitting processes outlined in the next section, and that the package will fully address the required permit conditions and agency concerns. NEP anticipates that mitigation will demonstrate no net loss of existing wetland functions, values, and statutory interests within the watershed.

1.9 PROJECT ALTERNATIVES

Several project alternatives were analyzed and eliminated as they did not meet the Project needs. See *Section 2: Alternatives Analysis* for project alternatives.

1.10 PROJECT PERMITTING REQUIREMENTS

NEP will obtain all approvals and permits required by federal, state, and local agencies for the Project, and the Project will be constructed and operated to comply fully with state and local environmental policies (*See Section 11: Regulatory Compliance*). The Project will contribute to a reliable, low cost, diverse energy supply for the Commonwealth with minimal environmental impact. *Table 3: Permit/Consultation Requirements* summarizes the federal, state, and local permits and approvals required or potentially required for the Project in Massachusetts.

Table 3: Permit/Consultation Requirements

Agency	Permit/Review/Approval
Federal	
U.S. Army Corps of Engineers (“USACE”)	Section 404 PCN Permit and consultations under Section 106 of National Historic Preservation Act and Section 7 of the Endangered Species Act
United States Environmental Protection Agency (“EPA”)	National Pollutant Discharge Elimination System (“NPDES”) General Permit for Stormwater Discharges and Construction Dewatering Activities/Stormwater Pollution Prevention Plan (“SWPPP”)
State	
Executive Office of Energy and Environmental Affairs (“EEA”)	MEPA Review/ Certificate of the Secretary
Massachusetts Department of Environmental Protection (“MassDEP”)	Section 401 Individual Water Quality Certificate and Variance
Massachusetts Natural Heritage and Endangered Species Program (“NHESP”)	Massachusetts Endangered Species Act – Determination of Take or No Take; Conservation Permit (if needed)
Massachusetts Historical Commission (“MHC”)	Consultation under M.G.L. c. 9 in accordance with 950 CMR 70-71
Energy Facilities Siting Board (“EFSB”) ¹⁰	G.L. c. 164, §69J Petition for Approval to Construct Transmission Lines
Massachusetts Department of Public Utilities (“DPU”)	G.L. c. 164, §72 Petition for Determination of Public Necessity and Convenience
Department of Conservation and Recreation (“DCR”)	Construction Access Permit
Massachusetts Department of Transportation (“MassDOT”)	Permit to Access State Highway/Non-Municipal Utility Permits for crossing over of state roads with utility lines.
Local	
Conservation Commissions in Athol, Fitchburg, Gardner, Leominster, Royalston, Sterling, Warwick, Westminster, and Winchendon	Order of Conditions per the Massachusetts Wetlands Protection Act (“MA WPA”) ¹¹ and local bylaws.
Fitchburg Commissioner of Public Works	Stormwater Permit
Fitchburg Tree Warden	Tree trimming/Removal Permit
Gardner Zoning Board of Appeals	Special Permit – Earthmoving & earth alteration
Royalston Conservation Commission	Stormwater Management Permit

10 Concurrently with its Petition to the Siting Board, NEP intends to file Petitions with the Department of Public Utilities (DPU) in accordance with G.L. c. 164, § 72 and requesting exemptions from the Zoning Ordinances of the communities pursuant to G.L. c. 40A, § 3, other than those noted above.

11 MA WPA Orders of Conditions are local permits unless and until a superseding Order of Conditions is issued by MassDEP.

Royalston Board of Selectmen	Written Permission for soil removal activities
Sterling Conservation Commission	Stormwater Management Permit
Sterling Zoning Board of Appeals	Earth Removal Permit
Westminster Zoning Board of Appeals	Earth Removal Permit
Winchendon Zoning Board of Appeals	Earth Removal Permit

1.11 CONSTRUCTION METHODS AND PROJECT SCHEDULE

Overall, NEP strives to design and implement projects to avoid or minimize adverse environmental impacts to the extent practicable. Where impact is unavoidable, minimization and mitigation techniques are employed. As such, NEP has developed procedures and policies to guide the professionals who plan and oversee implementation of Project construction. NEP’s construction methods are summarized in *Section 10: General Transmission Line Construction Procedures*; please also refer to *Appendix C: National Grid Environmental Guidance Document (“EG-303NE”)* for additional information on the general procedures and policies implemented during construction to identify and control environmental impacts.

NEP anticipates starting construction in 2025 which is anticipated to last at least a minimum of three years.

1.12 MEPA JURISDICTION

The Project is subject to MEPA review as it requires one or more state permits and exceeds the thresholds listed in *Table 4: MEPA Thresholds*.

Table 4: MEPA Thresholds

<u>MEPA EIR Threshold</u>
EIR: Land: <i>Direct alteration of 50 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices. (301 CMR 11.03(1)(a))</i>
EIR: Wetlands, Waterways and Tidelands: <i>Alteration of one or more acres of bordering vegetated wetlands (“BVW”). (301 CMR 11.03(3)(a)(1)(a))</i>
EIR: Wetlands, Waterways and Tidelands: <i>Alteration of ten or more acres of any other wetlands. (301 CMR 11.03(3)(a)(1)(b))</i>
EIR: Environmental Justice: <i>The Secretary shall require an EIR for any Project that is located within a Designated Geographic Area around an Environmental Justice Population. (301 CMR 11.06(7)(b))</i>
<u>MEPA ENF Thresholds</u>
ENF: Wetlands, Waterways and Tidelands: <i>Alteration of 500 or more linear feet of bank along a fish run or inland bank. (301 CMR 11.03(3)(b)(1)(b))¹²</i>
ENF: Wetlands, Waterways and Tidelands: <i>Alteration of one half or more acres of any other wetlands. (301 CMR 11.03(3)(b)(1)(f))</i>
ENF: Rare Species: <i>Taking of an endangered or threatened species or species of special concern, provided that the Project site is two or more acres and includes an area mapped as a Priority Site of Rare Species Habitats and Exemplary Natural Communities. (301 CMR 11.03(2)(b)(2)). (Potential-ongoing consultations.)</i>

This Expanded Environmental Notification Form (“EENF”) is being filed in accordance with 301 CMR 11.05(7) to provide more extensive and detailed information as part of a request for submission of a Single EIR, in accordance with 301 CMR 11.06(8).

The EENF Form included with this submission addresses all potential impacts of the Project. This narrative supplements the EENF Form and provides additional detailed information on those aspects of the Project that have the potential to adversely affect the environment and that are within the subject matter jurisdiction of the required or potentially required state permits:

- Land Use
- Wetlands and Wildlife
- Rare Species
- Historical and Archaeological Resources
- Environmental Justice Populations.

To the extent that the Secretary determines that the Scope should include additional information, we request that the information be addressed in the Single EIR.

¹² In most cases, construction mat crossing will span the Bank of rivers and stream; however, the potential for alteration has been accounted for in the review of MEPA Thresholds.

1.13 SINGLE EIR OPTION

The Project exceeds the MEPA EIR threshold for Land alteration, BVW alteration, and is located within a designated geographic area around an EJ population. NEP respectfully requests that MEPA allow a Single EIR filing.

2.0 ALTERNATIVES ANALYSIS

2.1 INTRODUCTION

As noted in *Section 1*, this Project consists of refurbishment activities on the existing 69 kV Transmission Line along an existing ROW. NEP's overriding goal throughout the planning and design phases of the Project has been to select the alternative that best (A) meets the identified Project need and reliability, (B) addresses the various regulatory and permitting objectives, (C) including minimizing environmental impacts, and D) provides a cost-effective solution to customers. Several alternatives were evaluated. This alternative analysis presents a No Build Alternative and options for selective/targeted maintenance and improvements. None of the alternatives to the Project are feasible and meet the identified needs.

2.2 NO BUILD ALTERNATIVE

As required by 301 CMR 11.07(6)(f)(2), a No Build Alternative must be evaluated to establish a baseline against which the Project can be evaluated. However, in this instance, the No Build Alternative does not achieve the Project's goals and benefits.

This Project consists of refurbishment activities to existing assets. If no action is taken, deteriorating structures will pose a safety risk to NEP personnel and will affect NEP's ability to provide reliable electrical services to members of the public. Given the condition of the existing circuits and the need to provide high speed communications between the substations these circuits serve, this option was not pursued.

In summary, under the No-Build Alternative, the electric supply system in the region, would not comply with national and regional reliability standards and criteria. Given the asset condition of the existing circuits and pole deterioration, the no build alternative would leave the transmission system at risk resulting in severe reliability issues. Additionally, the no-build alternative does not satisfy the need to provide high speed communications between the substations these circuits serve. Therefore, the No-Build Alternative is not considered to be a feasible option.

2.3 CRITICAL ASSET REPAIR ALTERNATIVE

A critical asset repair alternative was considered to address only the most critical asset related issues. However, this would require returning to the A1/B2 Lines repeatedly to complete less critical maintenance and improvement activities. This would result in repeated access and temporary impacts including temporary construction matting, within Public Open Space and Recreational Areas, adjacent Watershed Areas, BVW and other environmental resources and rare species habitat. Additionally, this alternative would not address the quantity of asset condition concerns, would not improve the reliability of existing communications between the substations served by the circuits, and would result in inefficiencies in revisiting the same ROW within a short time span. This alternative was deemed infeasible and not analyzed further.

2.4 69 kV REBUILD ALTERNATIVE

As stated in *Section 1.4*, future proofing the Lines with a 115 kV carrying capacity allows NEP to minimize the likelihood of repeat impacts to adjacent landowners and environmentally sensitive areas as customer and renewable energy needs continue to grow in the region. Refurbishing the Lines to operate with a 69 kV carrying capacity would not meet the identified need and therefore, was not considered a feasible alternative.

Additionally, due to the outage constraints of the A1/B2 Lines, the Project would need to utilize live line construction techniques. As such, the proposed replacement structures would need to be installed at a height above the existing structures, regardless of proposed voltage. Should the existing structures be replaced to

meet 69 kV standards, this would only result in a decrease of approximately 5.5-ft in structure height from those proposed. Therefore, the height standards for the required minimum horizontal clearance requirements would be the same at 69 kV as they are for the proposed 115 kV, and tree removal requirements on ROW would not be reduced. Refurbishing the Lines at 69 kV would not reduce environmental impacts and would not provide the benefit of operating the Lines at 115 kV in the future.

2.5 115 kV STRUCTURE DESIGN ALTERNATIVES

Double-circuit davit arms structures are proposed for the mainline and single-circuit davit arm structures are proposed for the tap lines. However, NEP evaluated alternative structures for both. In summary, for the A1/B2 mainline, alternative structure type, davit arm length and installation method were evaluated and excluded as infeasible due to increased footprint, ice jump condition¹³, soil conditions and safe clearance distance, respectively. For the tap lines, alternative structure types were evaluated and excluded due to outage constraints, reliability concerns, and limiting risk of tree contact, respectively. The alternative structures evaluated, and the reason why the alternative was not selected and is not further analyzed, is given below in *Table 5*.

Table 5: 115 kV Structure Design Alternative Evaluated and Reasons for Elimination

	Alternative	Reasons for Elimination
Mainline	Two single circuit structures	Two single circuit structures were eliminated as the design for the mainline as it would have required an increase in work footprint, additional concrete caisson foundations, and doubled the number of steel poles required.
	7-ft Davit Arm	A 7-ft davit arm was evaluated and rejected for use along the mainline structures. This is due to the findings of the ice jumping study, which identified that a 10-ft middle davit arm is required to maintain adequate clearance during ice-shedding.
	Direct embed all structures	Direct embed structures were evaluated for all locations along the mainline. However, due to wide range of soil conditions on the ROW, the direct embed method will not be feasible at all locations. Where possible, structures will be direct embedded 10% of their height plus 6-ft. Where soil conditions do not support direct embed structures, concrete caissons will be utilized.
	Light Duty Steel Poles	Due to the proximity of the proposed A1 structure to the existing B2 line, the diameter of light duty poles would not maintain safe clearance distance.
Athol Tap	Delta davit arm configuration structures	<p>The Athol Tap #2 Line was first proposed as delta configuration structures since the line is being rebuilt in place and will allow this type. This scope was changed to a vertical configuration to match the structures on the Athol #1 Tap.</p> <p>Reliability of inward facing circuits are believed to be better than delta by limiting risk of tree contact.</p> <p>2 single circuit H-frames would require 150-ft of ROW width vs the proposed 125-ft total.</p>

¹³ The maximum jump height of a transmission line after ice-shedding. Ice-shedding from conductors can cause significant vertical vibration of the transmission line.

		<p>Vertical: both circuits will be the same height, better visually, would require taller structures and caisson foundations.</p> <p>Delta: Structures are shorter, but less visually pleasing. If skipping structures, direct embed foundations may be similar in cost to caisson foundations.</p>
Athol and Crystal Lake Tap Lines	Double circuit structures	Because of reliability concerns associated with having both tap lines on the same structure, it was preferred to install single circuit structures.

2.6 PREFERRED ALTERNATIVE: COMPREHENSIVE REFURBISHMENT (THE PROJECT)

The Preferred Alternative, as described in *Section 1.5*, proposes various refurbishment activities and system improvements for 711 structures and the installation of six (6) new vertical jumper switch structures along the mainline and tap lines in MA. Access improvements or re-establishment and construction of new access, vegetation removal and the installation of OPGW is also proposed. Providing an efficient means of addressing asset condition concerns, replacing the deteriorating structures, and allowing high speed communications between substations, addresses the need without repeat impacts to wetland resource areas, rare species habitat, and adjacent homeowners. Therefore, this full-scale refurbishment meets all project objectives and reduces long term environmental impacts.

2.7 CONCLUSION

As described above, NEP analyzed the ability of several project alternatives to meet the identified needs. The No Build Alternative was rejected because it would not meet the identified need of addressing asset reliability and repair requirements. The Critical Asset Repair Alternative and the 69 kV Alternative would require supplemental projects (with additional environmental impacts) to adequately reinforce the A1/B2 Lines over the next decade. Access alone would result in approximately 49 acres of repeat temporary impacts to the same BVWs for each additional mobilization due to temporary construction matting. As such, the Project will best address the identified needs with the least impact to the natural and human environment.

3.0 LAND USE

3.1 INTRODUCTION

This section provides a description of existing land use along the Project ROW, as well as potential impacts and proposed mitigation measures associated with land alteration along the Project route. Existing conditions information for land use was obtained using MassGIS Standardized Assessors’ Parcel Use Codes for each community.

The MEPA General Purpose Plans in *Appendix A* depict areas of proposed land alteration (e.g., structure locations, access roads, work envelopes, tree removals, etc.) associated with the Project.

3.2 EXISTING CONDITIONS

3.2.1 Land Use

The land area of the Project ROW is approximately 844.4 acres. Using current MassGIS data layers, land use characteristics were evaluated for the existing ROW and a 300-ft buffer on either side of the ROW.

Land use within the ROW and adjacent uses within 300-ft of the ROW edge consists of predominantly Exempt Property¹⁴, with Residential being the second most common parcel designation. Because this Project is a refurbishment of an existing transmission line, area residents and businesses will benefit directly from the upgrades through increased system reliability. The land within the ROW has been actively utilized and maintained as a transmission line corridor since the 1910s. *Table 6* summarizes the MassGIS land use information for the ROW and adjacent uses within 300-ft of the ROW edge.

Table 6: Land Use

Land Use				
Land Use Type	Acres Within ROW	% Within ROW	Acres Within 300ft Buffer	% Within 300ft Buffer
Mixed Use	66.32	7.85%	264.08	5.89
Residential	234.62	27.79%	1434.17	31.96
Commercial	3.37	0.40%	43.33	0.97
Industrial	82.41	9.76%	349.90	7.80
Forest Property	32.21	3.81%	227.00	5.06
Agricultural/ Horticultural	2.01	0.24%	21.31	0.47
Recreational Property	1.47	0.17%	9.90	0.22
Exempt Property	391.65	46.38%	1933.12	43.08
Unknown	5.05	0.60%	19.31	0.43
Transportation	20.11	2.38%	143.48	3.20
Water	5.18	0.61%	41.66	0.93
Total	844.41		4354.73	

Source: [MassGIS \(Bureau of Geographic Information\)](#), June 2022. Used 2020/2021/2022 parcel data from each town and used their use codes as land use type. Percent rounded to closest 100th.

Exempt Property constitutes 46.38% within the ROW and 43.08% within the 300-ft buffer. This category of land use includes federal, state, and local land (municipal and authorities); charitable (hospitals, cemeteries); religious organizations (churches); and educational institutions. For this Project, Exempt

¹⁴ Exempt Property are properties that qualify from exemption from taxation under various provisions of the law and include public land and facilities, hospitals, schools, churches and cultural institutions, M.G.L. Chp. 59 §5.

Property is found along the ROW where the municipalities own most of the property. The DCR owns large acres of land around Leominster, Royalston, and Winchendon that fall within the 300-ft buffer. These lands comprise acres of state forests including Royalston State Forest, Warwick State Forest, Leominster State Forest, and Otter River State Forest. The Town of Leominster owns reservoirs and conservation lands that fall within the 300-ft buffer. Other Exempt Property includes conservation land such as Bailey Brook Conservation Area in the City of Gardner, Minnie French Conservation Area in Town of Athol, Nashua Valley, Elm Street and Hill Street Conservation Area in the City of Leominster, and Shenk Farm Conservation Area in the Town of Westminster. The U.S. Fish and Wildlife Service has Exempt Property in the municipalities of Athol, Royalston, and Westminster. Mount Wachusett Community College property is within a half mile buffer of the ROW, and the parking lot of the college is within 300-ft buffer in the City of Gardner.

Residential land use comprises just over 27% of the ROW, and approximately 32% of the 300-ft buffer. After Residential land use, the next highest category of land use is Industrial land use. Industrial land use comprises 9.76% of the ROW, and 7.80% within the 300-ft buffer.

After Residential and Industrial land uses, the next highest category of use is “Mixed Use”. Mixed use constitutes over 7.85% of the ROW and 5.89% of the 300-ft buffer. These land uses are concentrated where the transmission ROW crosses major highways and primary roads. The Transportation category constitutes about 5.5% of the land use in the study area and includes highway and railroad corridors. These include State Highway Route 2, Massachusetts Bay Transportation Authority (“MBTA”), Fitchburg Railway, and DOT roads.

3.2.2. Sensitive Receptors

The 300-ft study buffer contains three (3) sensitive receptors – a fire station, a police station, and recreational land¹⁵. The town of Royalston has a police station and a fire station, located in the same building, within the 300-ft buffer. The distance from the edge of the stations to the 300-ft buffer is approximately 55-ft. The recreational land within the 300-ft buffer is located along Mellen Road, Winchendon. In addition, the Mount Wachusett Community College property parcel is located within the 300-ft buffer. The distance from the edge of the college parking lot to the edge of the ROW is approximately 150-ft. However, there are no Mount Wachusett Community College buildings within the 300-ft buffer.

3.2.3 Public Open Space

Public open space resources adjacent to the Project are listed in *Table 7*. The primary purposes of these protected lands include state parks and recreation, conservation, and habitat protection. Many of these areas provide year-round recreational opportunities such as hiking and nature study, and seasonal activities such as fishing. The majority of the open space areas located adjacent to the Project ROW provide scenic views and are often associated with rivers, reservoirs, wetlands, streams, rivers, and state forests.

Table 7: Open Space and Recreation Resources

Open Space and Recreation Resources ¹⁶		
Municipality	Site Name	Owner
ATHOL	Millers River WMA	Department of Fish and Game
	Minnie French Conservation Area	Town of Athol
FITCHBURG	Leominster State Forest	DCR - Division of State Parks and Recreation

¹⁵ Recreation Land is Land that has been designated under Chapter 61B.

¹⁶ MassGIS (Bureau of Geographic Information); December 2021

GARDNER	Crystal Lake West	City of Gardner
	Municipal Golf Course	City of Gardner
	Bailey Brook Conservation Area	City of Gardner
	Gardner Water Supply Land	City of Gardner
	North County Land Trust CR	North County Land Trust
	Crystal Lake Cemetery	City of Gardner
LEOMINSTER	Nashua Valley Conservation Area	City of Leominster
	Notown Reservoir Watershed	City of Leominster
	Notown Reservoir	City of Leominster
	Fall Brook Reservoir	City of Leominster
	Notown Reservoir	City of Leominster
	Leominster State Forest	DCR - Division of State Parks and Recreation
	Cutler Conservation Area	City of Leominster
	Notown Reservoir	City of Leominster
	Elm Street Conservation Area	Leominster Land Trust
	City of Leominster CR/APR	City of Leominster
	Powers Lawrence APR	Powers Lawrence and Sharon
Hill Street Conservation Area	Leominster Land Trust	
ROYALSTON	Royalston State Forest	DCR - Division of State Parks and Recreation
	Chase Memorial Forest	New England Forestry Foundation
	Fish Brook WCE	Corser R.
	Jacobs Hill Reservation	The Trustees of Reservations
	Stockwell & Tully CR	Mount Grace Land Conservation Trust
	Chase Memorial Forest	New England Forestry Foundation
	Otter River State Forest	DCR - Division of State Parks and Recreation
	Davis Hill Farm CR	Longworth Charles R and Mary O
	Lawrence Brook WCE	Byers Frank H.
	Millers River WMA	Department of Fish and Game
	Birch Hill WMA	Department of Fish and Game
Tully Lake	Army Corps of Engineers	
WARWICK	Jay CR	Jay Ralph L
	Warwick State Forest	DCR - Division of State Parks and Recreation
WESTMINSTER	Conservation Area	Town of Westminster
	Schenk Farm Conservation Area	Town of Westminster
	High Ridge WMA	Department of Fish and Game
	Tophet Swamp Conservation Area	North County Land Trust
WINCHENDON	Lake Dennison Recreation Area	Army Corps of Engineers
	Unnamed	Army Corps of Engineers
	Bailey Brook Conservation Area	City of Gardner
	Otter River State Forest	DCR - Division of State Parks and Recreation

3.3 LAND USE IMPACTS

As detailed in *Sections 1 and 2*, the proposed Project was selected to meet the identified refurbishment needs and minimize permanent impacts to environmental resources without repeat impacts to wetland resource areas, rare species habitat, and public open space. The majority of new land alteration will occur as a result of the construction of new access roads and the modification of previously existing access roads as necessary to facilitate the refurbishment effort and required tree removals to obtain required horizontal clearances from the edge of ROW under all weather conditions. This will result in approximately 216 acres of permanent disturbance. Within reason, the use of existing access roads and routes has been prioritized so as to reduce new alterations.

Proposed work includes refurbishment activities and system improvements for 711 structures and the installation of six (6) new direct embed vertical jumper switch structures along the mainline and tap lines in MA. Additional refurbishment work includes the installation of new conductor, insulators and associated hardware, and installation of OPGW along the entire length of the Project. Concrete caisson foundations will be installed at 305 structure locations; the remaining 406 structures will be installed via direct embed methods.

The means and methods of construction resulting in potential impacts and alterations is detailed in the sections below. The ROW and the existing access routes have been previously disturbed due to normal utility activities. Construction and operation of transmission lines and tap lines along the Project route will not conflict with or impact the use or accessibility of adjacent open space and recreational land, primarily because the proposed transmission lines will be located within an existing ROW.

3.3.1 DCR Property

The A1/B2 Lines, cross four (4) DCR Properties, the Leominster State Forest in Leominster and Fitchburg, the Royalston State Forest in Royalston, the Otter River State Forest in Royalston and Winchendon, and the Warwick State Forest in Warwick. NEP's easements for the A1/B2 Lines in these areas predate the establishment of DCR properties and state forests. *Table 8*, below, describes the parcel, structure segments and ROW area in each property. On ROW, these properties account for 78.54 acres of land, approximately 9.3% of the Project area.¹⁷ NEP has initiated discussions with DCR.

¹⁷ Land Use Code 900, 901, 910, 920V classified as Article 97 State Property.

Table 8: Project Areas within DCR Property

Property	Municipality	Parcel Number	ROW Segment ¹⁸	ROW Acreage ¹⁹
Leominster State Forest	Fitchburg	S53 10 0	543 to 540	3.03
	Leominster	458 6	554 to 555	1.09
		458 7 A	553	1.09
		119R 7 A	555 to 550-2	3.84
Royalston State Forest	Royalston	10-50	249 to 248;	1.66
		6-2	248 to 237-1	3.92
Otter River State Forest	Royalston	15-31	323-1 to 316	6.14
		15-27	315 to 313	2.29
	Winchendon	10 0 3	325-1 to 323-1	0.78
		10 0 47	347 (south)	0.23
		10 0 48	347 to 346E	3.21
		N/A	347 (north)	0.32
		10 0 51	349 to 348	1.22
Warwick State Forest	Warwick	312/404.0-0000-0029.0	191 to 186	4.15
		312/404.0-0000-0026.0	186 to 177	8.48
		312/404.0-0000-0015.0	177-159	16.51
		312/403.0-0000-0001.0	159 to 149	13.96
		312/401.0-0000-0024.0	128 to 122	4.91
		312/401.0-0000-0019.0	119 to 114	4.96

These areas offer opportunities of recreational activities to local residents and visitors. Several multi-use trails intersect the existing ROW. DCR trails vary in type from Forest Roads and Trails with natural surfaces to processed gravel, varying in width and condition. The Project has been designed to utilize existing access within NEP easements wherever feasible; however, coordination with DCR will be required for improving existing access and constructing new access roads within State Forest lands. As is discussed in more detail in *Section 3.3.3.1.1* below, due to the complex, steep, and rocky terrain, proposed access routes were selected based on historic use, constructability, feasibility, and safety.

¹⁸ Structure numbers refer to existing number.

¹⁹ Rounded to the nearest 100th.

3.3.2 Vegetation Removal/Maintenance

To obtain the minimum horizontal clearance of 30-ft to the edge of ROW under all weather conditions, the existing maintained portion of the ROW will need to be expanded, as necessary. The existing maintained ROW on the mainline, Crystal Lake Tap Line and Athol Tap Line is roughly 85-ft, 75-ft and 100-ft, respectively. To provide the necessary clearances for the replacement and new structures, the mainline and Crystal Lake Tap ROWs will be cleared to 100-ft and the Athol Tap ROW will be cleared to 125-ft. It is anticipated that approximately 105 acres on ROW and 18 acres off ROW will be removed to meet the required horizontal clearances. Following the completion of construction, maintenance activities will be consistent with the Five-Year Vegetation Management Plan (2019-2023), and subsequent approved plans, presented in *Appendix D*.

Routine vegetation management will continue within the ROW in accordance with NEP's approved VMP, see *Appendix D*. This plan was completed in compliance with 333 CMR 11.00, as well as all applicable state and federal regulations that mandate the management of utility ROWs, including, but not limited to: all applicable clauses of Chapter 85 of the Acts of 2000; the Massachusetts Endangered Species Act (MESA) and its regulations 321 CMR 10.00; 310 CMR 10.00, and 310 CMR 22.00; applicable Federal Regulatory Commission standards including NERC Standard FAC-003-5, Commissioner Order 693, and all applicable Federal Occupational Safety and Health Act, Department of Transportation and Department of Environmental Protection regulations.

As part of an Integrated Vegetation Management ("IVM") program, NEP's professional arborists oversee the uses of mechanical, natural, and chemical (herbicide application) methodologies when considering controls to maintain a ROW. Trained and licensed herbicide applicators use hand-held equipment under the direct supervision of certified supervisors/foremen. Vegetation management is necessary to ensure safe, reliable delivery of electric service through the transmission and distribution lines located on NEP ROWs. Tall growing tree species must be prevented from growing into or falling onto the lines. Dense woody vegetation, vines, invasive, and poisonous vegetation is removed from around structures, access roads, and anywhere in which they prevent access to the ROW for inspections, maintenance, repairs and emergency access to the lines. Mitigation measures are incorporated into the VMP procedures, and no significant adverse impacts are anticipated because of VMP implementation. Tree removal is also necessary to facilitate the construction of off-ROW access roads.

Table 9 summarizes the extent of tree/vegetation removal for the proposed Project.

Table 9: Summary of Estimated Tree Removal in MA²⁰

Tree Removal Location	Approximate Acres on ROW	Approximate Acres Off ROW
Project Wide in MA	109	55
Wetlands	14	2
Riverfront Area ²¹	14	3
Open Space	50	9
State Article 97 Land (DCR Property)	18	1
Municipal Article 97 Lands	10	2
Private Article 97 Lands	2	< 0.25
Federal Property	2	3
Land Trust Property	3	< 2
DFW/WMA	14	1

3.3.3 Access Routes, Work Pads/Envelopes and Pull Pads

3.3.3.1 Access Road Routes

As detailed in *Sections 1.6.1*, historic access roads/paths will require significant improvement to meet the access requirements for the Project and are categorized as either Standard Road Type 1-2 or Designed Road Type 3-5 as shown on the MEPA General Purpose Plans in *Appendix A*.

A summary of proposed access route types along with its impacts on ROW and off ROW is provided in *Table 10*. In addition, on ROW, the anticipated limit of cut/fill area is approximately 266 acres and off ROW is approximately 12 acres. Below are the summarized quantities of proposed access route types within the Commonwealth of Massachusetts.

Table 10: Summary of Proposed Access Routes

Type	Quantity on ROW	Quantity on off ROW
Standard Road Type 1 & 2 (lf)	875	6,309
Designed Road Type 3-5 (lf)	161,023	18,821
Existing (lf)	7,121	42,721
Temporary Construction Matting²² (sf)	3,419,471	300,156

3.3.3.1.1 Access Within DCR Properties

As discussed in *Section 3.3.1*, the existing ROW traverses the Leominster, Otter River, Royalston and Warwick State Forests. These properties are owned, maintained, and managed by DCR. The proposed Project will involve the construction of approximately 8 lf of Standard Road Type 1 & 2 on ROW, and

²⁰ Tree clearing amount was calculated by totally tree clearing for clearance with the conductor and tree clearing associated with the limit of disturbance.

²¹ Tree clearing approximations determined by GIS analysis of TLE Lidar imagery, ROW Survey and Riverfront Area Polygons.

²² Include matting for work envelopes, pull pads, access road and limit of disturbance matting in BVW and Isolated Wetlands, residential lawns and agricultural fields.

approximately 533 lf off ROW within the Warwick State Forest. No Standard Road Type 1 & 2 are proposed with the Leominster, Otter River, or Royalston State Forests.

The proposed Project will involve the construction of approximately 24,603 lf of Designed Road Type 3 – 5 within the ROW on DCR Property, and approximately 4,094 lf off ROW within the aforementioned DCR properties. As noted in *Section 3.3.3* above, wetland areas will be crossed using temporary construction matting. The following table, *Table 11*, summarizes impacts by access road type within the boundaries of DCR-owned properties.

Table 11: Summary of Project Impacts Within DCR Properties (as noted below)

Activity	Quantity ²³			
	On ROW		Off-ROW	
	Linear Feet	Square Feet	Linear Feet	Square Feet
Leominster State Forest				
Standard Road Type 1 & 2	N/A	N/A	N/A	N/A
Designed Road Type 3 - 5	3,096	37,152	2	24
Existing	N/A	N/A	N/A	N/A
Matting (Temporary) ²⁴	1,508	24,123	N/A	N/A
Royalston State Forest				
Standard Road Type 1 & 2	N/A	N/A	N/A	N/A
Designed Road Type 3 - 5	1,055	12,660	524	8,384
Existing	N/A	N/A	N/A	N/A
Matting (Temporary)	794	12,705	16	262
Otter River State Forest				
Standard Road Type 1 & 2	N/A	N/A	N/A	N/A
Designed Road Type 3 - 5	5,036	60,432	14	168
Existing	N/A	N/A	N/A	N/A
Matting (Temporary)	3,034	48,544	N/A	N/A
Warwick State Forest				
Standard Road Type 1 & 2	8	96	533	6,396
Designed Road Type 3 - 5	15,416	184,992	3,553	42,636
Existing	23	276	3,625	43,500
Matting (Temporary)	8,550	136,797	1,442	23,067

²³ SF of standard road, designed road and existing calculated with a travel width of 12-ft. Existing road or access are those that does not require improvements or modifications.

²⁴ Includes matting for work envelopes, pull pads, access roads and limit of disturbance matting.

3.3.3.1.2 Off-ROW Access Routes

The majority of the access routes leading onto the ROW are already established (i.e. from existing public ways, parking lots, or gravel pits). However, in nine (9) municipalities off-ROW land will be utilized for access. Most of these areas are off-ROW access routes where construction vehicles will use existing (unpaved) access roadways with improvements, as needed, or use re-established access routes that have more recently gone unused. There are several areas where off-ROW access roads will be established.

Where access roads exist, they generally have an 8-ft-wide travel lane. All off-ROW access roads are in uplands and upland portions of these access routes will be maintained after the Project is completed to allow for maintenance equipment to access the site, although actual post-construction conditions will be determined by NEP's agreements with individual property owners.

3.3.3.2 Work Pads/Envelopes and Pull Pads

Work envelopes will be placed at all structures where work is proposed. Work envelopes are necessary to accommodate the removal of existing structures, installation of new or replacement structures and their appurtenant features. Similarly, pull pads are being used to install new conductor, overhead transmission wire and OPGW. Pull pads are necessary to stage equipment being used to install new conductor and OPGW (see *Appendix A: MEPA General Purpose Plans*).

Temporary construction matting will be placed in locations where access is required to cross wetland resource areas. As the majority of the terrain throughout the ROW is rocky, uneven, and steep, the relocation of boulders²⁵ may be warranted to ensure safe mat placement. Relocated boulders will remain on-site (i.e., within the A1/B2 Lines existing easement). Within wetlands and agricultural fields, construction matting will be utilized to provide a safe work area. In the remaining upland work areas, stone work pads will be constructed. In general, the work envelopes have been designed to be up to approximately 157-ft by 80 to 100-ft depending on the width of the ROW and extent of grading required to create the level work area and provide adequate space for the typical live line construction associated with the Project's scope of work. The use of construction mats minimizes the need to remove vegetation beneath the access way and reduces the degree of soil disturbance and rutting in soft soils. Typical construction mats used by NEP are comprised of wooden timbers bolted together into 4-ft by 16-ft sections, wooden lattice mats, or composite mats. Similarly, pull pads may require grading or temporary construction mats in specific locations to support pulling of conductors and/or OPGW. Refer to EG-303NE in *Appendix C* for additional details. Approximately 2,200,651 sf of temporary construction matting within wetlands is anticipated for this Project.

3.3.3.3 Limit of Disturbance

It is anticipated that construction activities and materials will be confined to the LOD as shown on the MEPA General Purpose Plans in *Appendix A*, as described in *Section 1.6.2*. Within the LOD, equipment access, the placement of temporary BMPs, soil stockpiling and equipment maneuvering is anticipated. In addition, where applicable, tree removals are preliminarily assumed within the LOD zone due to the anticipated secondary impacts from grading activities. The proposed LOD overlaps with approximately 5 acres of DCR property. There is no disturbance or grading anticipated outside of the NEP's easement on DCR property for the construction of work envelopes, and pull pads; however, there are existing trails that are being improved outside of the ROW.

²⁵ Boulders vary in size from small to large stones.

The proposed LOD occupies 141 acres within the ROW and approximately 55 acres off ROW, excluding temporary construction matting which will be utilized with wetlands, residential lawns, and agricultural areas. NEP will coordinate with landowners to obtain temporary construction access, as necessary. Due to the land use constraints within Article 97 lands, construction access will be limited to the easement. As the Project design advances modifications, such as adding additional retaining walls, may be necessary to stay within the confines of the easement.

3.4 MITIGATION MEASURES FOR LAND

The Project design reflects NEP's significant efforts first to avoid and then to minimize adverse impacts to the land surrounding the Project site to the extent practicable. For example, NEP located the Project entirely within an existing ROW. Where feasible, the new foundations will be located to avoid adverse impacts. Also, the proposed design locates proposed structures in proximity to existing structures, whenever feasible; places proposed structures so that the transmission wires span several resource areas; clears vegetation only where necessary for safe operation; and utilizes existing/upland roadways for construction purposes. Overall, the Project is not expected to change or significantly impact land uses within the ROW or areas within 300-ft of the ROW during construction or operation as it is an existing transmission line.

NEP will submit a Stormwater Pollution Prevention Plan ("SWPPP") for the Project in compliance with the EPA's National Pollutant Discharge Elimination System ("NPDES") program under the Stormwater Construction General Permit. The SWPPP establishes a construction period contact list, presents a description of the proposed work, and identifies stormwater controls, spill prevention, and inspection practices to be implemented for the management of construction-related stormwater discharges from the Project. The SWPPP clearly identifies parties responsible for monitoring and reporting any activities out of compliance with the SWPPP or other environmental permits or approvals, and for handling extraordinary situations. The SWPPP also defines monitoring to occur until all disturbed areas on the site have been stabilized using standard BMPs. In this manner, the potential impacts associated with land disturbance (e.g., erosion and sedimentation) will be proactively managed so that impacts can be avoided. See *Section 12: Mitigation and Section 61 Findings*.

4.0 WETLANDS AND WILDLIFE

4.1 INTRODUCTION

Vanessa Hangen Brustlin, Inc (“VHB”) and BSC Group, Inc. (“BSC”), as consultants to NEP, delineated wetland resources along the Project route between Spring 2020 and Summer 2021, and Spring 2022. During the field investigations, 462 wetland areas and 128 streams were identified and delineated within MA. Since this Project consists of existing transmission assets, wetland resource areas cannot be completely avoided. In these instances, appropriate mitigation measures will be provided.

This section presents an overview of the identified and delineated wetlands and waterways along the Project route. Additional information and photographs are presented in *Appendix E: Supplemental Wetlands Information*. This information has been used by the design team to avoid, minimize, and/or mitigate work within sensitive resource areas as well as evaluate Project-related impacts.

4.2 PRELIMINARY DATA REVIEW

Before the start of the wetland field investigations/delineation, existing information was reviewed regarding the presence or absence of wetlands within the ROW. These source materials included:

- USGS Topographic Maps
- USGS Color Ortho Imagery (various years)
- U.S. Fish & Wildlife Service National Wetlands Inventory (“NWI”) MassGIS Datalayer
- MassGIS MassDEP Wetlands 1:12,000 Datalayer
- MassGIS 2021 Natural Heritage and Endangered Species Program (“NHESP”) Priority Habitats of Rare Species Datalayer
- MassGIS 2021 NHESP Estimated Habitats of Rare Wildlife Datalayer
- MassGIS NHESP Certified Vernal Pools Datalayer
- MassGIS NHESP Potential Vernal Pools MassGIS Datalayer
- MassGIS FEMA (“Federal Emergency Management Agency”) Q3 Flood Datalayer and FEMA Flood Insurance Rate Maps
- MassGIS Soils Datalayer

This information was synthesized and used in the field to assist wetland scientists in the location and identification of wetland systems along the Project route.

4.3 WETLAND DELINEATION METHODOLOGY/PROCEDURE

Surveys for wetland resource areas were conducted within the existing transmission line ROW and off ROW access route proposed locations in the municipalities of Warwick, Royalston, Athol, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling. Field teams used established delineation procedures as outlined in the Massachusetts Department of Environmental Protection’s Handbook on Delineating Bordering Vegetated Wetlands (March 1995) (“DEP Handbook”) and U.S. Army Corps of Engineers (“USACE”) Wetland Delineation Manual (“Environmental Laboratory, January 1987”) (“1987 Manual”) and the USACE Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (“USACE Supplement”) (2012). An excerpt of VHB’s Wetland Delineation Report specific to wetlands identified in Massachusetts along with photographs is presented in *Appendix E: Supplemental Wetlands Information*.

4.4 WETLAND RESOURCE AREAS

The Project is located within three (3) major watersheds including the Connecticut, Millers, and Nashua Watersheds. Of the three (3) watersheds intersected by the transmission line and tap lines, the largest is the Connecticut Watershed (11,260 square miles) and the smallest is the Millers River Watershed (392 square miles). The majority of the Project area is located within the Millers River Watershed.

The Connecticut Watershed is comprised of 11,260 square miles of wetlands, connecting 148 tributaries, including 38 major rivers and several lakes and ponds. The Miller River Watershed is comprised of 390 square miles of wetlands, about 313 square miles of which are in Massachusetts, connecting 107 lakes and ponds. The Nashua River Watershed is comprised of 538 square miles of wetlands, about 454 square miles of which are in Massachusetts, connecting six (6) major tributaries.

4.4.1 Waterways

On ROW, 37 intermittent streams and 55 perennial streams were identified during the delineation of the A1/B2 Lines. Off-ROW, 23 intermittent streams and 13 perennial streams were identified. There are 15 streams that have been designated by the Massachusetts Division of Fisheries and Wildlife (“DFW”) as significant cold-water resources. These include: Pauchaug Brook, Kidder Brook, Collar Brook, Fish Brook, Tully Brook, East Branch Tully River, Lawrence Brook, Boyce Brook, West Gulf Brook, Mellen Brook, Bailey Brook, Fall Brook, Slack Brook, Burnt Mill Pond Brook, and Lemerise Brook. Other named perennial watercourses include Fish Brook, Beaver Brook, Miller’s River, Beaman Brook, Wilder Brook, Parlay Brook, Foster Brook, and Reservoir Brook.

Stream substrates vary from stream to stream, and are comprised of boulder, cobble, gravel, sand, silt, and organic bottoms. Bank widths are also variable ranging from 0 to 60-ft in width.

According to the Massachusetts Surface Water Quality Standards and Classifications (Regulations 314 C.M.R. 4.00) there were multiple Class A and Class B waters within the delineation scope. Class A waters identified included: Richard Reservoir, Fish Brook, Perley Brook, Burn Millpond Brook, Notown Reservoir, Goodfellow Brook, Black Brook, and Fall Brook Reservoir. Class B waters identified included Tully Brook, Collar Brook, East Branch Tully River, Boyce Brook, Beaver Brook, Otter River, Millers River, and Wilder Brook.

Work is proposed within Outstanding Resource Waters (“ORWs”). Structure replacements, both steel direct embed structures and caisson foundations, temporary construction mat access and work envelopes are proposed within wetlands mapped as ORW associated with Goodfellow Pond, Simonds Pond, Notown Reservoir, Distributing Reservoir, Morse Reservoir, Fall Brook Reservoir, and Perley Brook Reservoir. Fall Brook Reservoir and Notown Reservoir are Class A Public Water Supplies (Class A Surface Water Source).

4.4.2 Wetland Characterization

The existing overhead transmission line ROW contains a variety of wetlands, most of which have been historically affected by the routine vegetation management for the safe operation of the transmission facilities. These wetlands typically consist of scrub-shrub, emergent marsh, or wet meadow communities. In accordance with the federal classification system found in Cowardian (1979), the following wetland community types were identified on the existing ROW:

Table 12: Wetland Community Types by Municipality

Cowdian Classification	Municipality								
	Warwick	Royalston	Athol	Winchendon	Gardner	Westminster	Fitchburg	Leominster	Sterling
Palustrine Emergent Persistent/Non-Persistent Seasonally Saturated (“PEM1B/PEM2B”)								X	
Palustrine Emergent Non-Persistent Seasonally Saturated/Seasonally Flooded (“PEM2B”)				X	X				X
Palustrine Emergent Non-Persistent Seasonally Saturated/Seasonally Flooded (“PEM2B/2C”)	X								
Palustrine Emergent Non-Persistent Seasonally Flooded/Permanently Flooded (“PEM2B/2Hb”)						X			
Palustrine Emergent Non-Persistent Seasonally Saturated/Seasonally Flooded/Semi-Permanently Flooded (“PEM2B/2C/2E”)		X							
Palustrine Emergent Non-Persistent Seasonally Saturated/Seasonally Flooded (“PEM2B/2C/2Fb”)			X						
Palustrine Emergent Persistent Seasonally Flooded (“PEM1C”)									
Palustrine Emergent Non-Persistent Seasonally Flooded (“PEM2C”)							X		
Palustrine Scrub Shrub Broad-leaved Deciduous Seasonally Saturated (“PSS1B”)			X			X			X
Palustrine Scrub Shrub Broad-leaved Deciduous Seasonally Saturated/Seasonally Flooded (“PSS1B/1C”).	X						X	X	
Palustrine Scrub Shrub Broad-leaved Deciduous Seasonally Saturated/Seasonally Flooded/Semi-Permanently Flooded (“PSS1B/1C/1E/1F”)		X			X				
Palustrine Scrub Shrub Broad-leaved Deciduous Seasonally Saturated (“PSS1B/1C/1E/1F/1G”)				X					
Palustrine Forested Broad-leaved Deciduous Seasonally Saturated (“PFO1B”)	X	X	X	X	X			X	
Palustrine Unconsolidated Bottom Semi-Permanently Flooded Beaver (“PUB1Fb”)					X				

Palustrine Forested Wetlands (“PFO”) are dominated by woody tree species that lose their leaves in the fall and become dormant until the spring. The hydrology of PFO wetlands vary significantly and may be

inundated or saturated for different lengths of the year. Because hydrology is variable, soil and vegetation types may vary as well.

Wetland vegetation common in PFO wetlands delineated within the ROW included: eastern white pine (*Pinus strobus*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), eastern hemlock (*Tsuga canadensis*), Speckled Alder (*Alnus incana*), Common winterberry holly (*Ilex verticillata*), highbush blueberry (*Vaccinium corymbosum*), partridgeberry (*Mitchella repens*), and cinnamon fern (*Osmundastrum cinnamomeum*). Signs of hydrology included water-stained leaves, high water table, saturation, inundation visible on aerial imagery, geomorphic position, and microtopographic relief. Soils were generally classified as having a Depleted Matrix F3, Redox Dark Surface F6, or Thick Dark Surface A12.

Palustrine Emergent Wetlands (“PEM”) are dominated by herbaceous vegetation, though there can be some trees and shrubs present. The hydrology of PEM wetlands can vary considerably from being seasonally inundated in certain situations to permanently flooded in others. Substrates in PEM wetlands vary with hydrology. Soils associated with permanently flooded areas may consist entirely of organic soils, or mineral soils enriched with organic materials. PEM wetlands that are saturated for only portions of the year are generally mineral soils.

Wetland vegetation common in PEM wetlands delineated within the ROW included: cinnamon fern, marsh fern (*Thelypteris palustris*), sensitive fern (*Onoclea sensibilis*), royal fern (*Osmunda spectabilis*), three-way sedge (*Dulichium arundinaceum*), sallow sedge (*Carex lurida*), common wooldsedge (*Scirpus cyperinus*), eastern star sedge (*Carex radiata*), tall white-aster (*Doellingeria umbellata*), New England American-aster (*Symphytotrichum novaeangliae*), common soft rush (*Juncus effusus*), sharp-fruited rush (*Juncus acuminatus*), American bur-reed (*Sparganium americanum*), rattlesnake manna grass (*Glyceria canadensis*), bluejoint Canada reed grass (*Calamagrostis canadensis*), rice cut grass (*Leersia oryzoides*), white meadowsweet (*Spiraea alba*), bristly blackberry (*Rubus hispidus*), common wrinkle-leaved goldenrod (*Solidago rugosa*), American witch-hazel (*Hamamelis virginiana*), jewelweed (*Impatiens capensis*), arrow-leaved tearthumb (*Persicaria sagittata*), Devil's beggar-ticks (*Bidens frondosa*), boneset thoroughwort (*Eupatorium perfoliatum*), and partridgeberry. Dominant woody species included smooth arrowwood (*Viburnum dentatum*), glossy false buckthorn (*Frangula alnus*), highbush blueberry, winterberry (*Ilex verticillata*), speckled alder, gray birch (*Betula populifolia*), and red maple scattered throughout or along the periphery. Signs of hydrology include water-stained leaves, high water table, saturation, hydrogen sulfide odor, inundation visible on aerial imagery, geomorphic position, drainage patterns, FAC-neutral test, and microtopographic relief. Soils were generally classified as having a Depleted Matrix F3, Redox Dark Surface F6, Thick Dark Surface A12, Histisol A1, and Histic epipedon A2.

Palustrine Scrub Shrub Wetlands (“PSS”) are dominated by woody deciduous plants that are less than 20-ft tall. The hydrology of a PSS wetland can vary between wetlands but is generally categorized as having shallow inundation or soil saturation in the early spring followed by extended periods of dry conditions during the late spring, summer and fall. Soils within PSS wetlands generally consist of mineral soils with minor amounts of organics.

Dominant vegetation included glossy buckthorn (*Frangula alnus*), highbush blueberry, cinnamon fern, various sedges (*Carex sp.*), maleberry (*Lyonia ligustrina*), bristly blackberry, royal fern, white meadowsweet, sensitive fern, speckled alder, and gray birch.

Common signs of hydrology included saturation, drainage patterns, FAC-neutral test, oxidized rhizospheres on living roots, geomorphic position, microtopographic relief, surface water, high water table, and water-stained leaves. Soils varied and included Sandy Redox S5, Depleted Matrix F3, Redox Dark Surface F6,

Histosol A1, Depleted Below Dark Surface A11, Depleted Dark surface F7, Histic Epipedon A2, Histisol A1, and Very Shallow Dark Surface TF12.

4.4.3 State Wetland Resource Area Classification and Evaluation

State regulated wetland resource areas found within and immediately adjacent to the ROW along the Project route consist of BVW, BLSF, Isolated Land Subject to Flooding (“ILSF”), Bank, LUW, and RA, as described below. Vernal Pool habitat is also discussed in terms of NHESP Designated potential vernal pools (“PVPs”) and certified vernal pools (“CVPs”). Each type of wetland has an associated set of regulatory performance standards. The Project’s approach to meeting these standards is addressed in *Section 11: Regulatory Compliance*.

Bordering Vegetated Wetlands: BVW is defined at 310 CMR 10.55(2) as freshwater wetlands (wet meadows, marshes, swamps, and bogs) which border on creeks, rivers, streams, ponds and lakes. BVWs are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The ground and surface water regime and the vegetation community which occur in each type of freshwater wetland are specified in the Massachusetts Wetlands Protection Act (WPA) G.L. c. 131, § 40.

Due to ROW vegetation maintenance activities, the majority of BVW delineated along the existing ROW have dominant elements of both PEM and PSS vegetation. All dominant PEM wetlands delineated have a significant element of PSS vegetation, but not vice versa.

Bordering Land Subject to Flooding: BLSF is defined at 310 CMR 10.57(2)(a) as an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds or lakes. BLSF extends from the banks of these waterways and water bodies; where a BVW occurs, it extends from said wetland. The boundary of BLSF is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm.

Isolated Vegetated Wetlands (“IVW”) and Isolated Land Subject to Flooding: ILSF is defined at 310 CMR 10.57(2)(b) as an isolated depression or a closed basin that serves as a ponding area for run-off or high ground water which has risen above the ground surface. Isolated wetlands are not jurisdictional resource areas under the WPA unless they hold enough water to meet the definition of ILSF (310 CMR 10.57(2)(b)). Protection of IVW varies by municipality and are often afforded local protection regardless of size. During field investigations, wetlands were not delineated beyond the utility ROW. Off-ROW hydrologic connections were assumed for wetlands located on the border of the ROW.

Inland Bank: Bank is defined at 310 CMR 10.54(2) as the portion of the land surface, which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent floodplain, or, in the absence of these, it occurs between a water body and upland. A Bank may be partially or totally vegetated, or it may be comprised of exposed soil, gravel or stone. The physical characteristics of a Bank, as well as its location, are critical to the protection of wildlife. The upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is lower. The lower boundary of a Bank is the mean annual low flow level.

Land Under Waterbodies and Waterways: LUW is defined at 310 CMR 10.56(2) as the land beneath any creek, river, stream, pond or lake. The boundary of LUW is the mean annual low water level. Land under all ponds, lakes, perennial and intermittent streams, located within the Project route, is afforded protection under the WPA (G.L. c. 131, § 40) and regulations at 310 CMR 10.56.

Riverfront Area: RA is defined at 310 CMR 10.58(2) as the area of land between a river’s mean annual high-water line and a parallel line measured horizontally. RA may include or overlap other resource areas or their buffer zones. The RA does not have a buffer zone.

Under the 310 CMR 10.58(2)(1), 200-ft RA is given to the following:

- A. A river or stream shown as perennial on the current United States Geological Survey (“USGS”) or more recent map provided by the Department is perennial.
- B. A river or stream shown as intermittent or not shown on the current USGS map or more recent map provided by the Department, that has a watershed size greater than or equal to one (1) square mile, is perennial.
- C. A stream shown as intermittent or not shown on the current USGS map or more recent map provided by the Department, that has a watershed size less than one (1) square mile, is intermittent unless:
 - i. The stream has a watershed size of at least ½ (0.50) square mile and has a predicted flow rate greater than or equal to 0.01 cubic feet per second at the 99% flow duration using the USGS Stream Stats method. The issuing authority shall find such streams to be perennial; or
 - ii. When the USGS StreamStats method cannot be used because the stream does not have a mapped and digitized centerline (including but not limited to streams located in the following basins: North Coastal Basin, Taunton Basin, Buzzards Bay Basin, Cape Cod and Islands Basin, and that portion of the South Coastal Basin that is south of the Jones River sub-basin), and the stream has a watershed size of at least ½ (0.50) square mile, and the surficial geology of the contributing drainage area to the stream at the project site contains 75% or more stratified drift, the issuing authority shall find such streams to be perennial. Stratified drift shall mean sand and gravel deposits that have been layered and sorted by glacial meltwater streams. Areal percentages of stratified drift may be determined using USGS surficial geologic maps, USGS Hydrological Atlases, Massachusetts Geographical Information System (MassGIS) surficial geology data layer, or other published or electronic surficial geological information from a credible source.”

Vernal Pool Habitat: Vernal Pool habitat is defined at 310 CMR 10.04 as confined depressions that hold water for two (2) continuous months during spring and/or summer most years, and which are free of adult fish, including a 100-ft buffer if that area is within a jurisdictional wetland pursuant to the WPA and regulations.

4.5 LOCAL RESOURCE AREA CLASSIFICATION AND EVALUATION

Local wetland resource areas are those wetlands that are provided additional protection beyond that provided by the WPA and/or are not provided protection under the WPA and the state wetlands regulations. For example, local bylaws may provide additional interests or performance standards to a wetland resource area. Additionally, isolated wetlands may be provided protection by a local wetland bylaw or ordinance that claims jurisdiction over these areas. In addition, several municipalities also consider the 100-ft buffer zone a wetland resource area as opposed to an upland buffer. Municipalities that have implemented a wetland bylaw or ordinance are described below (*Table 13 Additional Bylaw Protections by Municipality*):

Table 13: Additional Bylaw Protections by Municipality

MUNICIPALITY	ADDITIONAL BYLAW PROTECTION BY MUNICIPALITY
ATHOL	No Wetlands Bylaw.
FITCHBURG	Additional jurisdictional resource areas include all isolated wetlands, vernal pools, kettle holes, and 100-ft Buffer Zone to Resource Areas (not including FEMA 100-Year Floodplain/BLSF). 50-ft No Disturb Zone and 75-ft No Build Zone.
GARDNER	Additional jurisdictional resource areas include all vernal pools, intermittent streams, and 100-ft Buffer Zone to Resource Areas (not including FEMA 100-Year Floodplain/BLSF). 30-ft No Disturb Zone and 60-ft No Build Zone.
LEOMINSTER	No Wetlands Bylaw.
ROYALSTON	No Wetlands Bylaw.
STERLING	No Wetlands Bylaw.
WARWICK	No Wetlands Bylaw.
WESTMINSTER	Additional jurisdictional resource areas include all vernal pools. 25-ft No Disturbance Zone.
WINCHENDON	Additional jurisdictional resource areas include all vernal pools, ponds of any size, springs, intermittent streams, and 100-ft Buffer Zone to Resource Areas (not including FEMA 100-Year Floodplain/BLSF).

4.5.1 Wildlife

This section discusses wildlife and associated habitat characteristics commonly found in the types of wetlands that are present along the Project route.

PSS Wetlands: A variety of birds, mammals, reptiles, amphibians and invertebrates are known to use the habitat provided by PSS wetlands. The diverse vegetation and structural features associated with forested (and scrub-shrub) wetlands provide feeding, breeding, nesting, and cover for a variety of wildlife species. Important wildlife habitat characteristics found within Project impact areas include:

- Wetland/ Aquatic food plants
- Upland/wetland food plants (hard mast and fruit)
- Shrub thickets/stream beds with abundant earth worms
- Thick shrub/herbaceous cover (suitable for Veery nesting)
- Standing dead tree (snag)
- Dense herbaceous cover
- Small mammal burrows
- Tree roots under water’s surface
- Large woody debris on ground
- Rock piles and crevices
- Depressions that may serve as seasonal vernal pools
- Areas of ice-free open water in winter
- Emergent wetland pockets
- Intermittent streams

Wildlife commonly found in PSS wetland communities include birds such as: common yellowthroat (*Geothlypis trichas*), song sparrow (*Melospiza melodia*), common grackle (*Quiscalus quiscula*), and American goldfinch (*Carduelis tristis*). Small mammals include the water shrew (*Sorex palustris*), short-tailed shrew (*Blarina bevicauda*), white-footed mouse (*Peromyscus leucopus*), star nosed mole (*Condylura cristata*), eastern chipmunks (*Tamias striatus*) and eastern cottontail (*Sylvilagus floridanus*). Larger species, such as ruffed grouse (*Bonasa umbellus*), wild turkeys (*Meleagris gallopavo*), skunks (*Mephitis mephitis*),

raccoons (*Procyon lotor*), Virginia opossums (*Didelphis virginiana*), and woodchucks (*Marmota monax*) may also be present.

PEM Wetlands: Wildlife commonly found in PEM wetland communities include: American toad (*Bufo a. americanus*), northern spring peeper (*Pseudacris c. cineris*), wood frog (*Rana clamitans melanota*), red winged black bird (*Agelaius phoeniceus*), swamp sparrow (*Melospiza georgiana*), and common yellowthroat (*Geothlypis trichas*).

4.6 IMPACTS TO WETLANDS AND WILDLIFE

The Project's anticipated wetland impacts include areas within the ROW as well as any off-ROW resource areas that are impacted. This section provides an overview of the temporary and permanent impacts of access roads and construction areas in BVWs, 100-ft Buffer Zone to BVW, other wetland areas and Wildlife within the work areas.

Overall, impacts to wetland resource areas are anticipated to have both temporary and permanent impacts on the resource areas and its associated buffer zones due to comprehensive nature of the refurbishment (including new structures) and access improvements and establishment of new access. Additionally, incremental changes to the existing footprint of power line structures and access roads might have temporary and long-term impacts on the wildlife, but they will be localized to the immediate areas within the ROW. Wildlife habitats will remain intact. NEP proposes to address all the impacts and provide appropriate wetland mitigation to offset any permanent wetland impact.

- Temporary impacts include construction matting, soil stockpiling and maneuvering equipment within the Limit of Disturbance.
 - Temporary impacts are anticipated within Bank, BVW, Isolated Wetlands, RA, BLSF and LUW.
- Permanent impacts include tree removal for horizontal clearance with the overhead line and within the Limit of Disturbance; fill within BVW, Isolated Wetlands, LUW, and BLSF associated with new concrete caisson foundations; cut/fill associated with road building, work envelopes and pull pads; and access road re-establishment and establishment of new access roads.
 - Permanent impacts are anticipated within BVW, Isolated Wetlands, RA, BLSF, LUW and Buffer Zone.

Table 2 above presents a summary of wetland resource area impacts. Wetland Resource Areas are shown on the *MEPA General Purpose Plans in Appendix A: Figures*. The discussion of wildlife impacts is incorporated into the wetlands impact analysis, below.

4.6.1 TEMPORARY IMPACTS

4.6.1.1 Bordering Vegetated Wetlands

Temporary impacts to BVW are anticipated due to construction mats used for access roads and construction areas (e.g., construction work envelopes, and pull pads). A typical construction mat detail is presented in *Appendix C*. Construction mats are placed over existing vegetation (i.e., there is little or no ground disturbance). After all work is completed, construction mats will be removed, and the site restored to preconstruction condition after approximately one growing season.

Access Roads: Since this Project involves comprehensive refurbishment activities and system improvements to the existing assets, upland access options were infeasible in some areas due to extensive wetlands within the ROW and a number of constraints (e.g., steep slopes, avoiding cultural resources). In these areas, existing access roads will be improved or re-established to provide safe access for vehicles

during construction and for the future operation and maintenance of the transmission lines and tap lines. The construction of new access roads will require either cut or fill, and placement and compaction of imported gravel. NEP has established standards for establishing access roads as described in *EG-303NE, Appendix C*. Access roads are being designed for a 12-ft wide travel lane.

Where present, BVW will be stabilized by placement of temporary construction mats. The area of disturbance is approximately 16-ft wide. Although new, re-established, or improved upland access routes may be maintained as such, construction mats used along access roads during construction will be removed from the BVWs.

BVWs that will be temporarily impacted for refurbishment activities are identified in Table 14.

Table 14: BVW with Temporary Impacts due to Construction Matting for Access

MUNICIPALITY	WETLAND ID
WARWICK	WA-W1, WA-W2, WA-W4, WA-W6, WA-W7, WA-W10, WA-W11, WA-W12, WA-W13, WA-W14, WA-W16, WA-W17, WA-W21, WA-W22, WA-W24, WA-W25, WA-W29, WA-W31, WA-W34, WA-W35, WA-W37, WA-W38, WA-W39, WA-W40, WA-W41, WA-W42.
ROYALSTON	RO-W1, RO-W3, RO-W4, RO-W4A, RO-W5, RO-W6, RO-W7, RO-W10, RO-W11, RO-W12, RO-W13, RO-W14, RO-W15, RO-W16, RO-W16A, RO-W17, RO-W21, RO-W22, RO-W24, RO-W25, RO-W26, RO-W27, RO-W28, RO-W29, RO-W30, RO-W31, RO-W34, RO-W35, RO-W36, RO-W38, RO-W39, RO-W40, RO-W42, RO-W43, RO-W44, RO-W45, RO-W47, RO-W48, RO-W49, RO-W50, RO-W51, RO-W52, RO-W53, RO-W54, RO-W64, RO-W63, RO-W62, RO-W61, RO-W59, RO-W58, RO-W57, RO-W56, RO-W38.
WINCHENDON	WIN-W1, WIN-W1A, WIN-W3, WIN-W4, WIN-W5, WIN-W7, WIN-W12, WIN-W14, WIN-W15, WIN-W22, WIN-W27, WIN-W28, WIN-W30, WIN-W31, WIN-W32, WIN-W33, WIN-W34.
GARDNER	GA-W1, GA-W2, GA-W3, GA-W4, GA-W5, GA-W5A, GA-W6, GA-W7, GA-W8, GA-W11, GA-W13, GA-W14, GA-W15, GA-W17, GA-W18, GA-W19, GA-W20, GA-W22, GA-W23, GA-W25, GA-W26, GA-W29, GA-W30, GA-W32, GA-W33, GA-W35.
WESTMINSTER	WE-W1, WE-W2, WE-W3, WE-W4, WE-W5, WE-W6, WE-W10, WE-W11, WE-W12, WE-W15.
FITCHBURG	F1-W1, F1-W3, F1-W4, F1-W5, LE-W1, LE-W2, F1-W9
LEOMINSTER	LE-W4, LE-W8, LE-W10, LE-11A, LE-W12, LE-W13, LE-W15, LE-W16, LE-W17, LE-W21, LE-W22, LE-W23, LE-W24, LE-W27, LE-W32.
STERLING	ST-W2.
ATHOL	AT-W24, AT-W23, AT-W22, AT-W20A, AT-W20, AT-W19, AT-W18, AT-W17, AT-W15B, AT-W15A, AT-W15, AT-W12, AT-W11, AT-W8, AT-W7, AT-W5, AT-W2, AT-W1

Construction Areas: The installation of new structures/or replacement of structure foundation, and placement of work envelopes in or near BVW, and activities within the LOD will result in short-term impacts associated with the use of construction mats within BVW.

Construction work envelopes will vary in size based on various factors, for example specific activities and equipment required at each location and topographical constraints. In general, the work envelopes have been designed to be up to approximately 157-ft by 80 to 100-ft depending on the width of the ROW and extent of grading required to create the level work area and provide adequate space for the typical

construction associated with the project scope of work. Similarly, pull pads may require grading or temporary construction mats in specific locations to support pulling of conductors and/or OPGW. In addition, BVW impact area was conservatively calculated to include all areas where construction mats are used, but because the mats are installed in 4-ft by 16-ft sections they cannot conform to the exact wetland boundary and often extend beyond the boundaries of the BVW.

BVWs that will be temporarily impacted for refurbishment activities are identified in Table 15.

Resulting impacts from matting associated with access road, work envelopes, pull pads and LOD are anticipated to be approximately 51 acres of BVW. However, these impacts will be limited to the construction phase only.

Table 15: Temporary Impacts due to Construction Matting for Foundation Installation

MUNICIPALITY	WETLAND ID
WARWICK	WA-W1, WA-W2, WA-W4, WA-W6, WA-W7, WA-W9, WA-W10, WA-W11, WA-W12, WA-W13, WA-W14, WA-W15, WA-W16, WA-W17, WA-W20, WA-W21, WA-W22, WA-W22C, WA-W23, WA-W24, WA-W25, WA-W27, WA-W28, WA-W29, WA-W31, WA-W34, WA-W35, WA-W37, WA-W38, WA-W39, WA-W40, WA-W41, WA-W42,
ROYALSTON	RO-W1, RO-W2, RO-W3, RO-W4, RO-W4A, RO-W5, RO-W6, RO-W6A, RO-W7, RO-W8, RO-W9, RO-W10A, RO-W10, RO-W11, RO-W12, RO-W13, RO-W14, RO-W15, RO-W16, RO-W16A, RO-W17, RO-W21, RO-W22, RO-W23, RO-W24, RO-W25, RO-W26, RO-W27, RO-W28, RO-W29, RO-W30, RO-W31, RO-W32, RO-W33, RO-W34, RO-W35, RO-W36, RO-W38, RO-W39, RO-W40, RO-W41, RO-W42, RO-W43, RO-W44, RO-W45, RO-W47, RO-W48, RO-W49, RO-W50, RO-W51, RO-W52, RO-W53, RO-W54, RO-W67, RO-W64, RO-W63, RO-W62, RO-W61, RO-W60, RO-W59, RO-W58, RO-W57, RO-W56, RO-W55, RO-W38.
WINCHENDON	WIN-W1, WIN-W2, WIN-W3, WIN-W4, WIN-W5, WIN-W7, WIN-W11, WIN-W12, WIN-W13, WIN-W14, WIN-W15, WIN-W22, WIN-W25, WIN-W27, WIN-W28, WIN-W30, WIN-W31, WIN-W32, WIN-W33, WIN-W34.
GARDNER	GA-W1, GA-W2, GA-W3, GA-W4, GA-W5, GA-W5A, GA-W6, GA-W7, GA-W8, GA-W9, GA-W10, GA-W12, GA-W13, GA-W14, GA-W15, GA-W16, GA-W17, GA-W18, GA-W19, GA-W20, GA-W22, GA-W23, GA-W25, GA-W26, GA-W27, GA-W28, GA-W9, GA-W11, GA-W13, GA-W14, GA-W15, GA-W17, GA-W18, GA-W19, GA-W20, GA-W22, GA-W23, GA-W25, GA-W26, GA-W27, GA-W29, GA-W30, GA-W31, GA-W32, GA-W33, GA-W35, GA-W41, GA-W40, GA-W39, GA-W38, GA-W37, GA-W7, GA-W36.
WESTMINSTER	WE-W1, WE-W2, WE-W3, WE-W4, WE-W5, WE-W6, WE-W8, WE-W10, WE-W11, WE-W12, WE-W13, WE-W14, WE-W15, WE-W16, WE-W17.
FITCHBURG	F1-W1, F1-W2, F1-W3, F1-W4, F1-W5, F1-W6.
LEOMINSTER	LE-W1, LE-W2, LE-W3, LE-W6, LE-W7, LE-W8, LE-W10, LE-W11, LE-W11A, LE-W12, LE-W13, LE-W14, LE-W14A, LE-W15, LE-W16, LE-W17, LE-W18, LE-W19, LE-W21, LE-W22, LE-W23, LE-W24, LE-W27, LE-W30, LE-W31, LE-W32,
STERLING	ST-W2
ATHOL	AT-W24, AT-W23, AT-W22, AT-W20A, AT-W20, AT-W19, AT-W18, AT-W17, AT-W16, AT-W15B, AT-W15A, AT-W15, AT-W13, AT-W12, AT-W11, AT-W9, AT-W8, AT-W7, AT-W6, AT-W5, AT-W4, AT-W2, AT-W1.

4.6.1.2 Other Wetland Resource Areas

Access Roads: Temporary construction matting may be used for access where existing access roads do not exist. Stone will be added to some access roads within the BLSF to stabilize the surface and support equipment. Where this is necessary, the existing road surface will be over-excavated and filled with clean gravel or stone so there will be no change in elevation or flood storage capacity. Thus, no compensatory flood storage is required, and no significant temporary or permanent impact is anticipated.

Where stream crossings are required, construction mats will be installed in a manner that will span the Bank, thus avoiding direct temporary impacts to Bank. In most cases, construction mat crossings will span the Bank of rivers and streams. However, the potential for alteration has been accounted for in the review of MEPA thresholds and approximately 67,954 sf of temporary construction matting has been proposed. Crossings are proposed for site access within the medium-sized to larger streams and rivers e.g., the Black Brook, Mirey Brook, Fish Brook, Perley Brook, Boyce Brook, and Fall Brook, located along the Project route. Where crossings are required on open water, and medium-sized to larger streams with spans are greater than 30-ft, temporary impacts to LUW are anticipated. Approximately 32,206 sf of matting is anticipated to temporarily impact LUW.

Construction Areas: There will be temporary impacts to RA, BLSF, and Isolated Wetlands, due to the placement of construction mat work envelopes during the installation of new/or replacement structures and overhead line work and activities within the LOD (*see MEPA General Purpose Plans in Appendix A*). In these instances, the construction mat work envelopes are placed on top of existing vegetation and over intermittent stream channels. As such, roots are not disturbed, earth disturbance is largely avoided, and streams are allowed to flow beneath the mat platform. The construction mats will be removed, and the area restored, as necessary, upon completion of construction. No change in elevation or flood storage capacity will occur related to temporary impacts due to construction matting.

Temporary matting impacts associated with access roads, work envelopes, pull pads and the LOD within RA, BLSF, and Isolated Wetlands is approximately 11 acres, 0.27 acres and 1.64 acres, respectively.

BLSF, IVW, and RA will be temporarily impacted due to mowing for equipment access. See *Table 16* for identification of isolated wetlands within each town with temporary impacts due to matting.

Table 16: Isolated Wetlands with Temporary Impacts due to Matting

MUNICIPALITY	WETLAND ID
WARWICK	WA-W23
ROYALSTON	RO-W55, RO-W2, RO-W32
GARDNER	GA-W9, GA-W31, GA-27
WESTMINSTER	WE-W13, WE-W14
FITCHBURG	FI-W8, FI - W10
LEOMINSTER	LE-W9, LE-W11, LE-W14, LE-W14A, LE-W18, LE-W20
ATHOL	AT-W13, AT-W9

4.6.1.3 Wildlife

During construction, temporary impacts to wildlife may be caused by the presence of construction equipment, construction activities, and habitat alteration/vegetation impacts resulting from construction. The duration of temporary impacts may vary from the period of active construction only, to the following growing season, when vegetation recovers from disturbance. Wildlife using the forested edge of the cleared ROW as well as the ROW itself may be affected. Mobile species such as birds and large mammals will

temporarily leave the area to avoid construction activities and disturbance but may then be impacted by the displacement. Smaller and less mobile animals, such as small mammals and herpetofauna, may be directly impacted by activities within the ROW. The number of individual animals impacted during the construction phase are expected to be relatively few, compared to the total population of any given species in and around the ROW. Temporary impacts will be localized to the immediate areas of construction, which includes only a portion of the ROW, and are not anticipated to be significant to any species at the population level.

4.6.2 PERMANENT IMPACTS

4.6.2.1 Bordering Vegetated Wetlands

Access Roads: NEP evaluated existing and historically used access routes that traverse BVWs to determine whether road improvements in select locations are feasible due to their location, the length of resource area crossed and whether there is an existing historic road base in these areas. No access roads will be established within BVW.

Construction Areas: No permanent impacts to BVW are anticipated for construction areas due to work envelopes or pull pads.

Structures: Concrete caisson foundations will be required for installation of new structures/or replacement structures within BVW, resulting in the permanent fill of approximately 1,896 sf of BVW. In general, approximately 79 sf of fill is necessary for each concrete caisson steel monopole structure. The Project was designed to remove structures from wetlands where possible, resulting in the removal of approximately 36 structures from BVW. 24 structures are proposed with concrete caissons within BVW are highlighted in *Table 17: Fill within BVW for Concrete Caisson Installation* below and on the MEPA General Purpose Plans.

Table 17: Fill within BVW for Concrete Caisson Installation

MUNICIPALITY	WETLAND ID	MAINLINE OR TAP NAME	STRUCTURE #
ATHOL	AT-W23	MAINLINE	413
	AT-W17	MAINLINE	404
	AT-W8	MAINLINE	140
	AT-W15B	MAINLINE	151
GARDNER	GA-W14	MAINLINE	229
	GA-W13	MAINLINE	380
ROYALSTON	RO-W49	ATHOL TAP 2	CHW 8
	RO-W59	ATHOL TAP 1	CHE 10
	RO-W59	ATHOL TAP 2	CHW 24
	RO-W10	ATHOL TAP 1	CHE 32
	RO-W11	ATHOL TAP 2	CHW 28
	RO-W26	ATHOL TAP 1	CHE 38
	RO-W4A	ATHOL TAP 1	CHE 39
	RO-W28	ATHOL TAP 2	CHW 30
WARWICK	WA-W22	MAINLINE	201
	WA-W29	MAINLINE	228
	WA-W29	ATHOL TAP 1	CHE 87
WESTMINSTER	WE-W1	MAINLINE	40
	WE-W3	ATHOL TAP 1	CHE 73
	WE-W3	ATHOL TAP 2	CHW 32
	WE-W10	ATHOL TAP 1	CHE 46
WINCHENDON	WIN-W14	ATHOL TAP 1	CHE 66
	WIN-W33	ATHOL TAP 2	CHW 42
	WIN-W33	ATHOL TAP 1	CHE 61
	WIN-W34	MAINLINE	194

Vegetation Management: To provide a safe area for construction, reliability, maintenance, and operation of the proposed line, vegetation on the existing ROW will continue to be maintained to prevent the growth of tall woody species. In addition, to obtain the minimum horizontal clearance of 30-ft to the edge of ROW under all weather conditions, the existing maintained portion of the ROW will need to be expanded. The existing maintained ROW on the mainline, Crystal Lake Tap and Athol Tap is 85-ft, 75-ft, and 100-ft, respectively. To provide the necessary clearances for the replacement and new structures, the mainline and Crystal Lake Tap ROWs will be cleared to 100-ft and the Athol Tap ROW will be cleared to 125-ft.

Tree removal within BVW and the LOD is anticipated to result in converting approximately 17 acres of PFO to PSS. Following the completion of construction, vegetation maintenance activities will be consistent with the Five-Year Vegetation Management Plan (“VMP”) (2019-2023), and subsequent approved plans, presented in *Appendix D*.

4.6.2.2 100-ft Buffer Zone to BVW and Inland Bank

Access Roads: Impacts to the 100-ft Buffer Zone to BVW and Inland Bank are anticipated due to the improvement/reestablishment of existing access roads and the establishment of new access roads. Approximately 18 acres of permanent impacts are anticipated within 100-ft Buffer Zone to BVW and Inland Bank. Where access roads exist, they are typically 8-ft wide and are comprised of historic fill material. Over time, access roads become degraded through weathering. The width and quality of the existing access roads

do not meet the current NEP standard to safely support construction equipment. To meet the safety and equipment requirements of the Project, NEP will upgrade the existing access roads from their existing width to a 12-ft wide travel lane. In areas where access road improvements are needed, the existing road will be regraded to provide a flat surface for utility equipment. Imported gravel will be added to the access roads where necessary as will be done for new access. Disturbed road shoulders will be stabilized immediately after road construction. Access roads to be improved that approach a wetland will terminate before the delineated limits of the wetland. See *Table 18*, for the anticipated Buffer Zones that will be permanently impacted by access roads.

Construction Areas: Work envelopes, pull pads and the LOD associated with construction access are anticipated to impact the 100-ft Buffer Zone to BVW and Inland Bank. In some locations, work envelope/pull pad improvements are needed to create a stable work platform for the safe operation of utility equipment. Permanent stone work envelope improvements are limited to regrading in the 100-ft buffer zone and upland areas. See *Table 19* for the anticipated Buffer Zones that will be permanently impacted by construction areas.

Approximately 90 acres of disturbance in Buffer Zone is anticipated. Where applicable, exposed soils will be stabilized with stone to prevent erosion and sedimentation to nearby resource areas.

Table 18: Buffer Zone with Permanent Impacts due to Access Road Improvements

MUNICIPALITY	WETLAND ID
WARWICK	WA-W1, WA-W2, WA-W4, WA-W5, WA-W6, WA-W7, WA-W8, WA-W9, WA-W10, WA-W11, WA-W12, WA-W13, WA-W14, WA-W15, WA-W16, WA-W17, WA-W18, WA-W19, WA-W21, WA-W22, WA-W22B, WA-W22C, WA-W23, WA-W24, WA-W25, WA-W26, WA-W27, WA-W28, WA-W29, WA-W30, WA-W31, WA-W32, WA-W33, WA-W34, WA-W35, WA-W36, WA-W37, WA-W38, WA-W39, WA-W40, WA-W41, WA-W42.
ROYALSTON	RO-W1, RO-W2, RO-W3, RO-W4, RO-W4A, RO-W5, RO-W6, RO-W6A, RO-W7, RO-W8, RO-W9, RO-W10A, RO-W10, RO-W11, RO-W12, RO-W13, RO-W14, RO-W15, RO-W16, RO-W16A, RO-W17, RO-W20, RO-W21, RO-W22, RO-W23, RO-W24, RO-W25, RO-W26, RO-W27, RO-W28, RO-W29, RO-W30, RO-W31, RO-W32, RO-W34, RO-W35, RO-W36, RO-W37, RO-W38, RO-W39, RO-W40, RO-W41, RO-W42, RO-W43, RO-W44, RO-W45, RO-W47, RO-W48, RO-W49, RO-W50, RO-W51, RO-W52, RO-W53, RO-W54, RO-W67, RO-W66, RO-W65, RO-W64, RO-W63, RO-W62, RO-W61, RO-W60, RO-W59, RO-W58, RO-W57, RO-W56, RO-W38.
WINCHENDON	WIN-W1, WIN-W1A, WIN-W3, WIN-W4, WIN-W5, WIN-W7, WIN-W10, WIN-W11, WIN-W12, WIN-W13, WIN-W14, WIN-W15, WIN-W22, WIN-W23, WIN-W24, WIN-W25, WIN-W26, WIN-W27, WIN-W28, WIN-W30, WIN-W31, WIN-W32, WIN-W33, WIN-W34.
GARDNER	GA-W1, GA-W2, GA-W3, GA-W4, GA-W5, GA-W5A, GA-W6, GA-W7, GA-W8, GA-W9, GA-W10, GA-W11, GA-W12, GA-W13, GA-W14, GA-W15, GA-W16, GA-W17, GA-W18, GA-W19, GA-W20, GA-W22, GA-W23, GA-W25, GA-W26, GA-W27, GA-W28, GA-W29, GA-W30, GA-W31, GA-W32, GA-W33, GA-W34, GA-W35.
WESTMINSTER	WE-W1, WE-W2, WE-W2B, WE-W3, WE-W4, WE-W5, WE-W6, WE-W7, WE-W8, WE-W9, WE-W10, WE-W11, WE-W12, WE-W13, WE-W14, WE-W15, WE-W16.
FITCHBURG	F1-W1, F1-W3, F1-W4, F1-W5, LE-W1, LE-W2, F1-W7, F1-W8, F1-W9, F1-W10,
LEOMINSTER	LE-W3, LE-W4, LE-W5, LE-W6, LE-W7, LE-W8, LE-W9, LE-W10, LE-W11, LE-W11A, LE-W12, LE-W13, LE-W14, LE-W14A, LE-W15, LE-W16, LE-W17, LE-W18, LE-W19, LE-W20, LE-W21, LE-W22, LE-W23, LE-W24, LE-W25, LE-W26, LE-W27, LE-W28, LE-W29, LE-W30, LE-W32, LE-W33.
STERLING	ST-W2

ATHOL	AT-W24, AT-W23, AT-W22, AT-W20A, AT-W20, AT-W19, AT-W15B, AT-W15A, AT-W15, AT-W14, AT-W13, AT-W12, AT-W11, AT-W9, AT-W8, AT-W7, AT-W6, AT-W5, AT-W2, AT-W1.
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Table 19: 100-ft Buffer Zone with Permanent Impacts due to Work Envelopes

MUNICIPALITY	WETLAND ID
WARWICK	WA-W7, WA-W18, WA-W19, WA-W19A, WA-W20, WA-W21, WA-W22, WA-W22C, WA-W23, WA-W24, WA-W27, WA-W28, WA-W29, WA-W30, WA-W31, WA-W32, WA-W33, WA-W37, WA-W39, WA-W40, WA-W41, WA-W42,
ROYALSTON	RO-W1, RO-W2, RO-W3, RO-W4, RO-W4A, RO-W5, RO-W6, RO-W6A, RO-W7, RO-W9, RO-W10A, RO-W10, RO-W11, RO-W12, RO-W13, RO-W14, RO-W15, RO-W16, RO-W17, RO-W22, RO-W23, RO-W24, RO-W25, RO-W26, RO-W27, RO-W28, RO-W29, RO-W30, RO-W31, RO-W33, RO-W34, RO-W35, RO-W36, RO-W37, RO-W38, RO-W39, RO-W40, RO-W41, RO-W44, RO-W47, RO-W48, RO-W49, RO-W51, RO-W52, RO-W53, RO-W54, RO-W67, RO-W66, RO-W65, RO-W64, RO-W63, RO-W62, RO-W61, RO-W60, RO-W59, RO-W58, RO-W57, RO-W56, RO-W55.
WINCHENDON	WIN-W1, WIN-W1A, WIN-W3, WIN-W4, WIN-W5, WIN-W10, WIN-W11, WIN-W12, WIN-W13, WIN-W14, WIN-W15, WIN-W22, WIN-W23, WIN-W24, WIN-W25, WIN-W26, WIN-W27, WIN-W28, WIN-W30, WIN-W31, WIN-W33,
GARDNER	GA-W1, GA-W4, GA-W6, GA-W7, GA-W8, GA-W9, GA-W10, GA-W11, GA-W12, GA-W13, GA-W14, GA-W15, GA-W16, GA-W17, GA-W18, GA-W19, GA-W22, GA-W25, GA-W27, GA-W29, GA-W30, GA-W31, GA-W32, GA-W33, GA-W34, GA-W35, GA-W40, GA-W38, GA-W36, GA-W7.
WESTMINSTER	WE-W1, WE-W2B, WE-W3, WE-W4, WE-W5, WE-W6, WE-W7, WE-W8, WE-W9, WE-W10, WE-W11, WE-W12, WE-W13, WE-W14, WE-W15, WE-W16,
FITCHBURG	F1-W1, F1-W3, F1-W4, F1-W5, LE-W1, LE-W2, F1-W7, F1-W8, F1-W9, F1-W10, LE-W3,
LEOMINSTER	LE-W4, LE-W5, LE-W6, LE-W7, LE-W8, LE-W12, LE-W13, LE-W14, LE-W14A, LE-W15, LE-W16, LE-W17, LE-W18, LE-W19, LE-W20, LE-W21, LE-W22, LE-W27, LE-W28, LE-W30, LE-W32, LE-W34,.
STERLING	ST-W2
ATHOL	AT-W23, AT-W21, AT-W20, AT-W19, AT-W18, AT-W17, AT-W16, AT-W15B, AT-W15A, AT-W15, AT-W14, AT-W13, AT-W12, AT-W11, AT-W9, AT-W8, AT-W4, AT-W2,

4.6.2.3 Other Wetland Resource Areas

Access Roads: Stone will be added, if necessary, to maintain and expand some roads within the RA and BLSF to stabilize the surface and support equipment. Where this is necessary in BLSF, the existing road surface will be over excavated and filled with clean gravel or stone so there will be no change in elevation or flood storage capacity. While this is a permanent impact, no compensatory flood storage is required, and no significant impact is anticipated. In areas where improved access roads intersect with rare species habitat, impacts and construction methodology will be site specific.

Riverfront areas that will be permanently impacted by refurbishment activities are associated with nine (9) unnamed streams and the following watercourses:

Pauchaug Brook, Black Brook, Mirey Brook, Kidder Brook, Collar Brook, Fish Brook, Boyce Brook, Lawrence Brook, Mill Glen Pond, Bailey Brook, Saw Mill Pond, Notown Reservoir, and Monoosnoc Brook. Other named perennial watercourses include Fish Brook, Beaver Brook, Miller’s River, and Wilder Brook.

Permanent impacts within RA associated with the access road, work envelopes and pull pads will be approximately 31 acres. Where feasible work envelopes and pull pads will be loamed and seeded and allowed to revegetate.

Permanent impacts are not anticipated to occur within BLSF due to access roads, work envelopes or pull pads as these areas will be over-excavated resulting in no loss of flood storage. However, these construction activities will occur within approximately 7 acres.

Structures: New concrete caisson foundation installation will result in permanent fill of approximately 76.6 cy within BLSF and 79 sf within an Isolated Wetland, and alteration of approximately 3,476 sf of RA. BLSF impacts from structures (as noted in *Table 2*) will be offset by compensatory flood storage (see mitigation discussion, below). Two (2) concrete caissons are proposed within LUW in the Crystal Lake Tap in Gardner. Impacts from structures within other wetland resource areas will be negligible after mitigation.

Vegetation Management: To provide a safe area for construction, reliability, maintenance, and operation of the proposed line, vegetation on the existing ROW will continue to be maintained post construction to prevent the growth of tall woody species. In addition, to obtain the minimum horizontal clearance of 30-ft to the edge of ROW under all weather conditions, the existing maintained portion of the ROW will need to be expanded. The existing maintained ROW on the mainline, Crystal Lake Tap and Athol Tap is 85-ft, 75-ft, and 100-ft, respectively. To provide the necessary clearances for the replacement and new structures, the mainline and Crystal Lake Tap ROWs will be cleared to 100-ft and the Athol Tap ROW will be cleared to 125-ft.

Tree removal within BLSF, RA, Isolated Wetland and Bank associated with vegetation cutting and the LOD is anticipated to result in 2 acres, 18 acres, 0.28 acres, and 0.61 acres, respectively. Following the completion of construction, vegetation maintenance activities will be consistent with the Five-Year Vegetation Management Plan (VMP”) (2019-2023), and subsequent approved plans, presented in *Appendix D*.

Approximately six (6) isolated wetlands will be permanently impacted by refurbishment activities, five (5) of the six (6) IVW’s are proposed for tree removals resulting in alteration of a PFO to a PSS. One (1) IVW (RO-W10A) will be permanently impacted by the installation of a concrete caisson foundation, (see *Table 20*).

Table 20: Isolated Wetlands with Permanent Impacts

MUNICIPALITY	WETLAND ID
WARWICK	WA-W22B, WA-W30
ROYALSTON	RO-W10A
WINCHENDON	WIN-W31A
GARDNER	GA-W27
ATHOL	AT-W9

4.6.2.4 Wildlife

Permanent impacts due to the Project will consist primarily of incremental changes to the existing footprint of power line structures and access roads, the addition of new access roads, and the conversion of forested areas to scrub shrub and emergent habitat types. The change in footprint of these infrastructure components will cause an incremental loss of vegetation and associated habitat. However, these impacts will not affect the long-term ability of the ROW and surrounding area to provide wildlife habitat. After one or two growing seasons, much of the temporary disturbance will be recovered, and only a small portion of the overall habitat provided by the ROW will be permanently impacted by construction. The basic structure of the ROW and type of habitat present (various open and shrubby habitats) will not be changed by the Project. Because the habitat will largely remain intact, when construction-related disturbance ends, most displaced individuals are expected to return and continue using the habitat provided by the ROW. A wealth of research indicates that the early successional habitat provided by ROWs is beneficial to a wide variety of wildlife species (Yahner 2003, King 2002), including birds, reptiles, and amphibians, especially in landscapes that are primarily forested or developed.

4.7 MITIGATION MEASURES FOR WETLANDS AND WILDLIFE

NEP proposes to provide appropriate wetland mitigation that meets local, state, and federal requirements to offset any permanent wetland impacts. While Project information presented herein is thorough with regard to impacts, and many proposed mitigation measures are identified and described, NEP is still evaluating specific details related to wetland mitigation. Permit applications to be submitted to state and federal regulatory agencies will provide the specific mitigation information required for the Project. At the local level, NEP will work with Conservation Commissions to discuss impacts and proposed mitigation as part of the Notice of Intent process. In addition, post construction, NEP will prepare applications for Certificates of Compliance from each of the Conservation Commissions. These Certificates ensure that wetland resources have been restored. NEP is committed to developing a mitigation package appropriate to address impacts of the Project. It is anticipated that mitigation will demonstrate no net loss of existing wetland functions values, and statutory interests within the watershed.

4.7.1. Design and Construction Best Management Practices (“BMPs”)

Construction activities will minimize disturbed areas; use upland/existing access roads and work envelopes where possible; utilize erosion and sedimentation controls; and involve supervision and inspection of construction activities within resource areas by an Environmental Monitor.

General mitigation measures discussed below will reduce wetland resource area impacts associated with each phase of construction. Many of these measures are standard proven procedures that NEP incorporates in all transmission line construction projects. Others are site specific measures designed to meet the needs of the Project.

Structures: During new/or replacement structure installation, erosion and sedimentation controls will be installed along the perimeter of the excavation to avoid sedimentation of the adjacent wetlands. Following excavation, spoil piles will be contained by controls in appropriate upland locations.

Access Roads: As part of the wetland delineation and constructability review, existing and previously used access roads (roads that were established during the construction and/or maintenance of the existing lines that are now overgrown) were documented to determine feasible routes that would avoid and minimize impact to wetland resource areas. Where feasible, access road locations have been chosen to avoid BVW completely (usually by way of off-ROW upland access where available); to minimize impacts by crossing BVW using existing paths (previously impacted areas); or to traverse the BVW at its narrowest location.

Impacts on small streams are minimal and limited to the construction phase only. These impacts consist of temporarily spanning streams with construction mats to allow construction equipment to cross. A detailed erosion and sediment control plan will be designed and implemented (see below). Following construction, temporary construction mat access roads will be removed from BVW and associated intermittent streams. Impacted resource areas will then be restored to pre-construction configurations and contours to the extent practicable. Work occurring in BLSF will either not result in the loss of flood storage capacity, or compensatory flood storage will be provided.

Work Envelopes/Pull Pads: Structure improvements in or near BVW will result in short-term effects associated with the creation of temporary construction work envelopes. Proposed BVW work envelopes will include temporary construction mats placed on top of existing vegetation. Following construction, all mats will be removed from BVW and Bank and the impacted resource areas will then be restored to their pre-construction configurations and contours to the extent practicable.

There is no work proposed in the vicinity of CVPs or NHESP PVPs. However, one field delineated PVP was identified in Warwick. Temporary mats are proposed within this area.

Erosion and Sedimentation Control: In addition to those described above, erosion and sediment control devices will be installed along the perimeter of identified wetland resource areas prior to the onset of soil disturbance activities to ensure that spoil piles and other disturbed soil areas are confined and do not result in downslope sedimentation of wetland resources. Low growing tree species, shrubs, and grasses will be mowed only along access roads and at work envelopes. To avoid disturbing the root mat, tree stumps will be left in place except at work envelopes, structure locations and within access roads.

Dewatering may be necessary during excavations for new/or replacement structures within or adjacent to wetland areas. If there is adequate vegetation in upland areas to function as a filter medium, the water generally will be discharged to the vegetated land surface. Where vegetation is absent or where slope prohibits, water will be pumped into a dewatering basin consisting of a filter bag with haybale or silt fence perimeter controls which will be located in approved areas outside wetland resource areas. The pump intake hose will not be allowed to set on the bottom of the excavation throughout dewatering. The basin and all accumulated sediment will be removed following dewatering operations and the area will be seeded and mulched.

Concrete Wash Outs: Concrete wash outs will be used to manage concrete waste associated with the installation of caisson foundations. Concrete and concrete washout water will not be discharged directly on the ground, in wetlands or waterbodies, or in catch basins or other drainage structures. Where possible, concrete washouts will be located away from wetlands or other sensitive areas. Concrete washout areas will be regularly inspected by an Environmental Monitor.

Environmental Field Issue Document: Per NEP policy, Environmental Field Issue (“EFI”) guidelines are developed for all construction and maintenance projects. At a minimum, the EFI will include the location of sensitive areas to be avoided, a summary of all permit requirements, detailed erosion and sediment control plans, and training requirements/documentation. All contractors and Environmental Monitors will be required to participate in EFI training before beginning work on site. In accordance with a schedule specified in the EFI, regular construction progress meetings will provide the opportunity to reinforce the contractor’s awareness of these matters.

Supervision and Monitoring: Throughout the entire construction process, NEP will retain the services of an Environmental Monitor (“Monitor”). The primary responsibility of the Monitor will be to oversee construction activities, including the installation and maintenance of erosion and sedimentation controls,

on a routine basis to ensure compliance with all applicable permitting requirements. The Monitor will be a qualified environmental scientist responsible for supervising construction activities relative to environmental issues. The Monitor will be experienced in erosion and sediment control techniques described in this narrative and will have an understanding of wetland resources to be protected.

During periods of prolonged precipitation, the Monitor will inspect all locations to confirm that the environmental controls are functioning properly. In addition to retaining the services of a Monitor, NEP will require the contractor to designate an individual to be responsible for the daily inspection and upkeep of environmental controls. This person will also be responsible for providing direction to the other members of the construction crew regarding matters of wetland access and appropriate work methods.

4.7.2 Wetland Resource Area Restoration

NEP uses standard mitigation measures on all transmission line construction projects to minimize impacts on wetland resource areas. These measures include revegetation and stabilization of disturbed wetland and adjacent upland soils and ROW vegetation management practices. Following construction, construction mats will be removed from BVW, and stone used for construction work envelopes, pull pads or guard structure work envelopes (locations to be determined) will be removed from BLSF and RA. Impacted areas will be returned to pre-construction configurations and contours to the greatest practicable extent. Restoration will include loam and seeding disturbed areas, final grading and installation of permanent erosion control devices, where necessary, in the adjacent uplands.

4.7.3 Wetland Replication and Compensatory Flood Storage

Unavoidable alteration due to new concrete caisson foundation installation will result in approximately 1,896 sf of permanent fill in BVW and 76.6 cubic yards (“cy”) of flood storage displacement. Potential replication and compensatory flood storage mitigation measures are outlined below; as noted previously, final details will be developed after consultation with federal, state and local agencies.

Wetland Replication: Potential wetland replication areas to compensate for the approximately 1,896 sf of permanent fill in BVW have been identified and are currently under review by NEP and their consultants. Wetland replication areas will be chosen based on their proximity to impact areas and potential to enhance the functions and values of existing wetland systems. These replications areas will offset nearby impacts related to new structure installations. Wetland seed mix will be applied, and woody vegetation plantings will be installed immediately following grading activities. Replication areas will be monitored as required in local, state and federal permits.

NEP will work with the local Conservation Commissions to finalize mitigation for permanent loss in BVW.

Compensatory Flood Storage: Massachusetts Department of Environmental Protection (“MassDEP”) requires compensation for any loss of 100-year flood storage capacity in accordance with the applicable performance standards of the WPA, as outlined at 310 CMR 10.57(4)(1). In accordance with these requirements, compensatory flood storage mitigation for the Project may include on-site replication at the same incremental elevations as the lost flood storage.

As noted previously, the Project will result in 76.6 cy of flood storage displacement due to the installation of eight (8) concrete caisson foundations. Compensatory flood storage mitigation is proposed for the Project and includes on-site replication at the same incremental elevations as the lost flood storage. Sediment controls will be installed along the perimeter of the excavation area to avoid sedimentation of the adjacent wetlands. Following excavation, the disturbed area will be restored, seeded and/or mulched.

NEP will work with the local Conservation Commissions, to finalize mitigation for permanent loss in flood storage area.

5.0 RARE SPECIES

5.1 INTRODUCTION

To assess the potential for state or federally listed, endangered, threatened, and/or special concern plant and/or animal species along the Project route, NEP reviewed MassGIS 2021 Priority and Estimated Habitat data layers, solicited database information from the Massachusetts NHESP, and followed the U.S. Fish and Wildlife Service (“USFWS”) Endangered Species Consultation Procedure available on their website.

5.2 USFWS

As a result of the USFWS Endangered Species Consultation Procedure, it was determined that four (4) federally listed species may be present within the Project area. One (1) species is a threatened mammal, one (1) species is a candidate insect, one (1) species is an endangered plant, and one (1) species is a threatened plant. Review is ongoing to determine permitting and/or avoidance measures.

5.3 NHESP

Based on NHESP data layers and consultation, the Project route contains 9 state-listed species (two (2) reptiles, one (1) amphibian, two (2) invertebrates, three (3) birds and one (1) plant), along portions of the Project route in Warwick, Royalston, Winchendon, Athol, Fitchburg and Leominster. Specific species are not identified herein at the agency’s request. These areas are within ROW that is maintained per NEP’s VMP and the yearly Operations and Maintenance Plan, as approved annually by NHESP.

This section outlines the pre-consultation process with NHESP, including field surveys and wildlife habitat assessments conducted to date, potential impacts to rare species habitat, and proposed mitigation measures.

5.3.1 NHESP Pre-Consultation Process

NEP is currently consulting with NHESP for the Project. Information regarding the species present within the Project footprint was generated using the Restricted Data regarding rare species presence within National Grid owned properties and easement areas that NHESP provides to NEP annually.

Preliminary Habitat Assessments and Field Surveys: BSC conducted several field visits to assess habitat quality for general wildlife and habitat suitability specifically for listed species in 2021. These field assessments focused on the areas of known occurrence mapped by NHESP, and wetland areas where habitat assessment is required for wetland permitting compliance. Suitable habitat for each of the 9 listed species is present in various locations in the Project area.

To date, BSC has prepared a preliminary memo, summarizing observations and the potential for impacts based on the observed habitat, known biology of the species, standard construction methods, and NHESP-approved, species-specific BMPs. This memo will be submitted to NHESP as part of the consultation process.

5.4 PROPOSED MITIGATION MEASURES

In addition to generally avoiding and minimizing species and habitat impacts to the maximum extent feasible, the Project will use NHESP-approved, species-specific measures to reduce impacts. At this time, NEP is working closely with NHESP and consultation is ongoing. The Project will implement the necessary actions to avoid, minimize, and mitigate Project-related impacts to comply with the MESA permit issued for the Project.

If, after consultation with NHESP, it is determined that a take will occur, a Conservation Management Plan (“CMP”) will be prepared to comply with MESA.

5.5 ANTICIPATED CONCLUSION

Consultation with NHESP is required to determine if the Project can be permitted using the Checklist option under MESA, or if CMP would be required.

6.0 HISTORICAL/ARCHEOLOGICAL RESOURCES

6.1 INTRODUCTION

This section reviews the Project’s potential impacts on cultural resources.

NEP contracted SWCA Environmental Consultants (“SWCA”) to conduct cultural resource due diligence on the Project. SWCA staff conducted background research and a physical inspection of the Project area. Background research involved a review of existing cultural resource reports on file at SWCA and the MHC, correspondence, and previously recorded historic and archaeological site files on file at MHC.

6.2 HISTORIC AND ARCHEOLOGICAL RESOURCES

In September 2020, SWCA conducted a due diligence review and documented known archaeological sites within and in proximity to the Project ROW. The analysis included a review of the State Historic Preservation Offices (“SHPO”) site files for archaeological sites and aboveground resources. For archaeological and cultural resources, the study area was established at 1 km from the A1/B2 centerline within Massachusetts, as well as 1 km from the centerline of the tap lines. The area of potential effect (“APE”) for aboveground historic resources includes areas adjacent to the ROW where visual impacts may occur. The APE for archaeological resources is defined as any areas of ground disturbance that may occur as a result of implementing the Project.

As part of the due diligence review, SWCA conducted a review of the MHC’s Inventory of Historic and Archaeological Assets of the Commonwealth using the Massachusetts Cultural Resource Information System (“MACRIS”) for the Massachusetts portion of the Project in June and July 2020. Records were searched for cultural resources within 1 km of the A1/B2 centerline within Massachusetts, as well as 1 km from the centerline of the tap lines. National Register of Historic Places (“NRHP”) files were also checked for the Project municipalities to identify any listed properties located in or near the A1/B2 Lines. Locational information from the files was cross-checked against SHPO maps, and those locations were confirmed using Google Earth (2020) imagery. The file review included both historic aboveground resources and archaeological resources that are listed or evaluated as eligible for listing in the State and National Registers of Historic Places, as well as surveyed properties that have not been evaluated or listed. Cultural resource management reports and town histories and historic maps salient to the Project study area were also consulted.

Based on the results of the cultural resources due diligence, SWCA recommended conducting an archaeological sensitivity assessment along the A1/B2 Lines to define areas of high archaeological sensitivity that might be impacted by the proposed work. The sensitivity assessment was completed on January 6, 2021 and formed the basis for developing a field testing plan related to the structure replacement locations. SWCA developed a research proposal based on the background research and sensitivity assessment, which was submitted to the MHC in April 2021.

Archaeological survey fieldwork for the Project structure replacement portion was conducted between June 28 and September 1, 2021, in Massachusetts. Additional fieldwork was conducted on December 6, 2021. Testing consisted of excavating 1,501 50-x-50- cm test pits 1,094 of which were in Massachusetts. In total, 150 pieces of cultural material were recovered (11 Native American and 139 Historic period), of which 142 came from Massachusetts. Five (5) archaeological resources were identified. Four (4) sites were identified in Massachusetts: three (3) pre-contact and one (1) post-contact. None of the sites in Massachusetts are considered significant and no further survey was recommended.

Additional testing was completed in 2022 for proposed new and/or re-established access roads. This additional field testing was sent in a research proposal to MHC on March 28, 2022. MHC modified permit #4001 to include the access road testing on April 8, 2022.

SWCA will submit the archaeological locational survey technical report to the MHC in October 2022. Should any archaeological site examinations be recommended, an additional research proposal will be submitted to the MHC at that time.

7.0 CLIMATE CHANGE ADAPTATION AND RESILIENCY

NEP has taken steps to promote climate change adaptation and resiliency in the design of the Project and continues to consider climate change and long-term infrastructure resiliency an important goal in its long-term infrastructure planning. The Project will result in a more climate-ready and resilient transmission system that can withstand more extreme weather events; address existing system capacity shortages and increased demand; and support future interconnections from renewable energy projects. In addition, the Project uses substantial portions of an existing ROW, thereby minimizing alteration of new land resources to construct the Project. The purpose of the Project is to address existing asset conditions along the A1/B2 Lines that pose a threat to electrical reliability.

The system upgrades, as proposed, are intended to help ensure the long-term longevity and reliability of the region's electrical infrastructure in the face of growing demand and the changing climate. The proposed upgrades to the A1/B2 Lines, the Athol, Crystal Lake and East Westminster Taps and access road improvements will weatherize this energy infrastructure and provide high speed communications between substations which will improve outage response times and help protect communities from blackouts during severe weather events.

The proposed Project has been designed in alignment with NEP's reliability goals and strategies in the following ways:

- Incorporates new design standards and the latest in design;
- Provides needed upgrades to existing electric transmission infrastructure;
- Provides the shortest project delivery time to meet the identified needs;
- Minimizes impacts to natural and social environments; and
- Provides a stronger electrical transmission system, vital to the public's safety, security and economic prosperity.

7.1. MEASURES TO ADAPT THE PROJECT TO CLIMATE CHANGE PER RMAT DESIGN STANDARDS

The Project has incorporated measures that seek to reduce potential vulnerability to anticipated climate risks and improve resiliency for future climate conditions. Governor Baker's Executive Order 569 (Order) set forth specific objectives to build resilience and adapt to the impacts of climate change in the Commonwealth. As part of the Order, the Executive Office of Energy and Environmental Affairs ("EOEEA") was instructed to produce the Massachusetts State Hazard Mitigation & Climate Adaptation Plan ("SHMCAP") (Plan). In addition to the Plan, the Order provides support to local and regional entities to develop action plans and implement priority projects via the Municipal Vulnerability Preparedness ("MVP") grant program. The predictive success of a project's improved resilience to climate change impacts is measured by the EEA Resilient MA Action Team's ("RMAT") Climate Resilience Design Standards Tool. The Plan states in its risk assessment, that, "in addition to increasing demand for heating and cooling, periods of both hot and cold weather can stress energy infrastructure...Electricity consumption during summer may reach three times the average consumption rate of the period between 1960 and 2000; more than 25 percent of this consumption may be attributable to climate change."²⁶

The Plan identifies that without reliable energy service, the basic needs of residents, visitors, businesses, and governments cannot be met. The Project, which is designed to improve reliable energy service within

26 EOEEA, 2011 as cited in Massachusetts State Hazard Mitigation and Climate Action Plan, 2018, p. 265. Retrieved 6/14/2022, <https://resilientma.org/shmcap-portal/static/media/SHMCAP-September2018-Full-Plan-web.286acceeb.pdf#page=90>

the region, serves this overall purpose. The Plan identified precipitation changes, sea level rise, rising temperatures, and extreme weather as the primary climate change interactions specific to regional power grid planning and incorporation of climate change data.

In accordance with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, NEP consulted the RMAT Climate Resilience Design Standards Tool for the Project. A copy of the output report generated by the RMAT tool (“RMAT Report”) is provided in *Appendix G*. A review of high-risk parameters related to Environmental Justice (“EJ”) Populations can be found in *Section 8.2.3*.

NEP considered each of these factors in designing the Project. NEP reviewed the RMAT Climate Resilience Design Standards Tool for climate projections, including coastal vulnerability, sea level rise and coastal flooding from the National Oceanic and Atmospheric Administration (“NOAA”) and temperature rise. However, the Project area is located outside of areas identified as vulnerable to sea level rise and coastal flooding. The Project is also designed to account for more frequent extreme weather events and extreme heat. The Project’s engineering design used structure loading criteria required by the National Electric Safety Code (“NESC”) and National Grid Design Loads for Overhead Transmission Structures. The NESC load criteria require consideration of combined ice and wind district loading, extreme wind conditions, and extreme ice with concurrent wind conditions. NEP’s standards also include consideration and contingency for heavy load imbalances and heavy ice conditions. All of these considerations result in a design that is better equipped to withstand extreme weather. The design incorporates materials (including steel structures and state of the art conductors) that have long useful lives and respond well to corrosive environments. The Project is also equipped to respond to increases in temperature. The new transmission line conductors are designed to operate at higher maximum operating temperatures at a higher carrying capacity and under fluctuations in air temperature.

The Project also contributes to regional climate resilient adaptation strategies for all the municipalities that the Project passes through. The RMAT Report documents the vulnerability of existing aging infrastructure and identifies key strategies to alleviate these vulnerabilities, including repair, upgrades and reuse and timely maintenance. Additionally, Project activities such as construction of access roads, work envelopes and installation of concrete caisson foundations will be required in floodplains. Design standards subject to floodplain will be followed during construction and the Project will meet the performance standards set forth by the state to ensure there are no impacts to climate change. The Project will result in a stronger electrical transmission system that is vital to the area’s safety, security, and economic prosperity.

7.2. CONSIDERATION OF ALTERNATIVE LOCATIONS AND DESIGN STRATEGIES IN LIGHT OF CLIMATE CHANGE

For the reasons described in *Section 2.0*, the Project team concluded that the proposed Project location is the only location that meets the identified Project need and reliability, addresses the various regulatory objectives, minimizes environmental impacts, and provides a cost-effective solution to customers.

8.0 ENVIRONMENTAL JUSTICE

8.1. INTRODUCTION

This section reviews the Project’s potential impacts on the EJ Populations pursuant to Section 58 of Chapter 8 of the Acts of 2021. The assessment has been prepared following the latest MEPA Protocol for Analysis of Impacts on Environmental Justice Populations (hereinafter, “MEPA Protocol for Analysis of EJ Impacts”) that addresses and enhances public involvement.

NEP conducted analysis on EJ communities within a distance of 1-mile (i.e. the Designated Geographic Area (“DGA”) of the Project. Within a 1-mile radius of the Project route, NEP identified 18 EJ Populations distributed in five (5) municipalities, including Gardner, Athol, Fitchburg, Leominster, and Lancaster. In total, Gardner, Athol, Fitchburg, Leominster, and Lancaster have 79.80%, 42.90, 72.90%, 67.10% and, 39% of the population living in an EJ Population, respectively. Additionally, as per the DPH EJ Tool, the total percentage of the communities of color in these five (5) municipalities are 9.90%, 18.0%, 37.70%, 30.70%, and 18.6%, respectively. Based on the MA DPH EJ Tool analysis, NEP identified populations that met the EJ criteria of income, minority, and minority and income within the designated geographical area. No English Isolation EJ Populations were identified within the designated geographical area; however, one EJ Population in Leominster (Block Group 2, Census Tract 7092.02) was identified to have 5% or more of the population who do not speak English very well.²⁷ This population was identified as having 7.7% of the population speaking Spanish or Spanish Creole. Additionally, NEP found that the median household income of the EJ Populations is \$44,659 in Leominster and \$44,659 in Gardner (MADPH, April 26).²⁸ *Table 21* summarizes all of the EJ populations, their EJ criteria, population and median income within the 1-mile designated geographical area and Census Tract. Additionally, NEP identified 65 EJ communities present within the 5-mile radius of the designated geographical area.

8.1.1 Public Involvement

Per 301 CMR 11.05(4)(b), Advance Notification of the Project was sent via electronic mail on June 14, 2022, by BSC to all contacts on the EJ Reference List, provided by the MEPA Office on February 23, 2022.

The Advance Notification consisted of the EJ Screening Form, as provided by the MEPA Office in the Public Involvement Protocol; a copy is provided in *Appendix H*. Efforts were made to ensure that language in the EJ Screening Form was understandable to the reader; that is, “technical” language was replaced with plain language, and legal jargon was omitted to the extent feasible.

NEP has undertaken measures to incorporate community involvement into the MEPA process. These community engagement strategies were determined based upon existing NEP stakeholder outreach methods and community engagement strategies provided in the Public Involvement Protocol. These involvement methods were discussed and supported by the MEPA Office during a Pre-Filing Consultation held on April 7, 2022.

A public website, available in Spanish and English, is available which provides details of the Project, an interactive mapper, and contact information for review. This website address²⁹ was also provided on the EJ Screening Form. Additionally, NEP hosted a virtual public meeting on July 11, 2022; information pertaining to this meeting was advertised in the Athol Daily News, Sentinel & Enterprise (Fitchburg and Leominster), Gardner Magazine and The Gardner News, Lancaster Online, Winchendon Courier, W

²⁷ Data for languages spoken was obtained from the American Community Survey 2011-2015 5-year estimates, Table B16001.

²⁸ MADPH (2022, April 26). *MA DPH Environmental Justice Tool*.

²⁹ Website address: www.newenglandA1B2.com

orcester Telegram & Gazette, and the Greenfield Recorder, and was also provided to the EJ Reference list via electronic mail and to the abutters of the A1/B2 Lines within EJ Populations via mail, see *Appendix H*. Repositories for hard copies of Project materials have been established at public libraries within each of the nine (9) municipalities within the Project Site in the Commonwealth of Massachusetts, which will be updated regularly as additional Project documents become available. NEP has established a Project-specific email address (info@newenglandA1B2.com) for community members to ask any remaining questions they may have,

As noted above, no English Isolation EJ Populations were identified within the designated geographical area; however, one (1) EJ Population in Leominster was identified to have 5% or more of the population who do not speak English very well. Additionally, NEP contacted the municipalities within 5-miles of the Project to confirm that the languages spoken other than English were limited to Spanish. Given this information, the EJ Screening Form, meeting invitation and meeting invitation advertisement were translated into Spanish. Interpretation services were provided at the public meeting.

NEP will maintain the distribution list of contacts from the EJ Reference List and any additional contacts that are identified during the virtual meetings and public engagement process. Contacts will receive notifications of the MEPA site visit, summaries of supplemental information submitted to the MEPA office and any other relevant notices or materials issued during the course of the MEPA review.

Table 21: Massachusetts Department of Public Health (DPH) EJ Communities (1- Mile)³⁰

Municipality	Census Tract	Category	Minority Population	Median Income
GARDNER	Block Group 1, 7075	Income	13.9 %	\$56,023
	Block Group 3, 7075	Minority	34.3 %	\$80,221
	Block Group 1, 7072	Income	18.4 %	\$32,746
	Block Group 3, 7073	Minority and Income	40.4 %	\$40,486
	Block Group 1, 7073	Income	21.4 %	\$42,608
	Block Group 2, 7073	Income	14.30%	\$44,659
	Block Group 2, 7074	Income	17.50%	\$51,635
	Block Group 2, 7075	Minority	32.9 %	\$63,401
	Block Group 1, 7071	Income	0.6 %	\$41,397
	Block Group 3, 7075	Minority	34.3 %	\$80,221
ATHOL	Block Group 1, 7033	Income	3.50%	\$42,292
	Block Group 2, 7031	Income	5.50%	\$43,938
	Block Group 1, 7031	Income	8.4 %	\$35,556
	Block Group 3, 7032	Minority	33.40%	\$0
FITCHBURG	Block Group 2, 7103	Minority	27.50%	\$62,353
LEOMINSTER	Block Group 2, 7092.02	Minority and Income	40.4 %	\$44,659
	Block Group 1, 7092.02	Minority	32.6 %	\$59,896
	Block Group 3, 7092.01	Minority and income	30.3%	\$55,938
LANCASTER	Block Group 4, 7131	Minority	29.6 %	\$95,278

8.2 ASSESSMENT OF EXISTING UNFAIR OR INEQUITABLE ENVIRONMENTAL BURDEN

8.2.1 Vulnerable Health Criteria

This section outlines the assessment of existing unfair or inequitable environmental burden, pre-consultation process, including surveys and interaction amongst community-based organizations (“CBOs”), tribes, or other residents, Massachusetts Department of Public Health (“DPH”) EJ Tool survey, assessments on vulnerable health EJ criteria, and assessments conducted to date, including potential impacts to the EJ population, and proposed mitigation measures. The DPH’s Bureau of Environmental Health worked with the Massachusetts Executive office of Energy and Environmental Affairs (EOEEA) to identify four (4) environmentally related health indicators to identify populations and communities with higher-than-average rates of environmentally related health outcomes. The four (4) vulnerable health criteria

³⁰ Data was obtained from <https://www.mass.gov/info-details/massgis-data-2020-us-census-environmental-justice-populations>

include: Low Birth Weight Rate, Pediatric Asthma Ed Visits Rate per 10,000, Heart Attack Rate, and Lead Poisoning Rate for each census tract and municipality.³¹ Vulnerable health criterion is defined as environmentally related health indicators that are measured to be 110% above state-wide averages.

The first part of the assessment analyzes the area around the Project for the potential for state listed environmental justice communities along the proposed route. NEP reviewed MA DPH Environmental Justice Tool data layers and solicited database information available on their website. Using the DPH EJ Tool, EJ Populations within 1-mile of the Project (“Designated Geographic Area”) that exhibit one (1) or more of the four (4) specific “vulnerable health criteria” were identified. As a result of the MEPA Protocol for Analysis of EJ Impacts Requirements/Procedure and MA DPH Environmental Justice Tool³², it was determined that all municipalities present in the designated geographic area meet at least one (1) Vulnerable Health EJ Criteria. The assessment concluded that the designated geographical areas exhibit “vulnerable health EJ criteria,” and therefore, potentially bear an unfair or inequitable environmental burden and related public health consequences. See *Table 22* below.

Table 22: Vulnerable Health EJ Criteria (1 - Mile) (rounded to tenth)

Municipality	EJ and Vulnerable Health EJ Criteria Status	Vulnerable Health Topic EJ Criteria Met	Statewide Rate per 1000 ³³
GARDNER	Meets at least one Vulnerable Health EJ Criteria	Low Birth Weight Rate per 1000	216.8
		Pediatric Asthma Ed Visits Rate per 10,000	83.1
		Heart Attack Rate per 10,000	26.4
		Lead Poisoning Rate per 1,000	17.6
ATHOL	Meets at least one Vulnerable Health EJ Criteria	Pediatric Asthma Ed Visits Rate per 10,000	83.1
		Lead Poisoning Rate per 1,000	17.6
		Low Birth Weight Rate per 1,000	216.8
		Heart Attack Rate per 10,000	26.4
FITCHBURG	Meets at least one Vulnerable Health EJ Criteria	Low Birth Weight Rate per 1,000	216.8
		Lead Poisoning Rate per 1,000	17.6
		Heart Attack Rate per 10,000	26.4
		Pediatric Asthma Ed Visits Rate per 10,000	83.1

31 Four vulnerable health EJ criteria are tracked in the DPH EJ Viewer, of which two (heart attack hospitalization and childhood asthma) are tracked on a municipal level, and two (childhood blood lead, and low birth weight) are tracked on a census tract level.

32 <https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html>

33 Five-year average that is equal to or greater than 110% of the state rate.

LEOMINSTER	Meets at least one Vulnerable Health EJ Criteria	Pediatric Asthma Ed Visits Rate per 10,000	83.1
		Heart Attack Rate per 10,000	26.4
		Lead Poisoning Rate per 1,000	17.6
		Low Birth Weight Rate per 1,000	216.8
LANCASTER	Meets at least one Vulnerable Health EJ Criteria	Pediatric Asthma Ed Visits Rate per 10,000	83.1
		Lead Poisoning Rate per 1,000	17.6
		Heart Attack Rate per 10,000	26.4

8.2.2 Additional DPH Tool

NEP identified additional potential sources of pollution within the municipalities in the designated geographic area that could be contributing to the existing unfair or inequitable environmental burden and related public health consequences. Of the 18 EJ Populations in the designated geographic area, 10 EJ Populations, within five (5) municipalities were found to have potential sources of pollution. Pollution sources reviewed consist of air operating permits, large quantity generators, M.G.L. C. 21E Sites, Tier II Toxics use reporting facilities, MassDEP sites with AULs, MassDEP groundwater discharge permits, wastewater treatment plants, MassDEP public water suppliers, underground storage tanks, EPA Facilities, and Energy generation and supply.

Lancaster

In Lancaster, Block Group 4, Census Tract 7131, seven (7) potential pollution sources were identified. In total, there are three (3) underground storage tanks, and one (1) M.G.L. C. 21E Site, wastewater treatment plant, MassDEP public water supplier, and EPA Facility (See *Table 23*).

According to NEP's survey on enforcement histories, there were two (2) facilities that received documented enforcement including the Lancaster Water Department and MCI Shirley Department of Corrections. The Lancaster Water Department (MassDEP public water supplier) has a history of 18 enforcements issued from 1996 to 2016 (See *Appendix H*). MCI Shirley Department of Correction (underground storage tank) has a history of seven (7) enforcements from 2011 to 2018, within one (1) penalty, a fine of \$500 (See *Appendix H*).

Leominster

In Leominster, Block Group 2, Census Tract 7092.02, one (1) underground storage tank was identified as a potential source of pollution (See *Table 23*).

According to NEP's survey on enforcement histories, Speedway 2431 was found to have a record of two (2) enforcements issued in 2011 and 2019 with no penalty assessed (See *Appendix H*).

Fitchburg

In Fitchburg, Block Group 2, Census Tract 7103, 32 potential pollution sources were identified including two (2) air operating permits, two (2) large quantity generators, four (4) large quantity toxic user, four (4) M.G.L. C. 21E Sites, seven (7) Tier II Toxics use reporting facilities, three (3) MassDEP sites with AULs,

one (1) wastewater treatment plant, six (6) underground storage tanks, two (2) EPA Facilities, and one (1) Energy generation and supply (See *Table 23*).

According to NEP's survey on enforcement histories there are 10 Individuals/Facilities that comprise the potential pollution sources. These facilities are:

- 431 Westminster St LLC (Air permit, Large quantity toxic user)
- Newark America (Air permit, Large quantity toxic user, "Tier II" toxic use reporting facility, EPA Facility)
- Omnova Solutions Inc. (Large quantity toxic user, "Tier II" toxics use reporting facilities, underground storage tank, EPA facility)
- Modu Form Inc. (Large quantity toxic user, "Tier II" toxics use reporting facility)
- Avery Dennison ("Tier II" toxics use reporting facility)
- Chemdesign Corp (AUL, Underground storage tank)
- Montachusett Regional Vocational School (Underground storage tank)
- Fitchburg Wastewater West Plant (Underground storage tank)
- Cristy Corporation (Underground storage tank)
- Booster Pump Station (Underground storage tank).

431 Westminster St LLC has a history of three (3) enforcements with no penalty assessed from 2000 to 2009. Newark America has a history of three (3) enforcements from 2001 to 2008, with a penalty assessed in 2005 with a fine of \$19,900. Omnova Solutions Inc. has a history of five (5) enforcements from 2002 to 2021, with a penalty assessed in 2002 with a fine of \$21,500. Modu Form Inc. has a history of four (4) enforcements from 1996 to 2014, with two (2) penalties assessed. One (1) in 1996 for \$500, and one (1) in 2000 for \$9,250. Avery Dennison has a history of three (3) enforcements from 2001 to 2015 with no penalties assessed. Chemdesign Corp has a history of four (4) enforcements with no penalties assessed from 2002 to 2013. Montachusett Regional Vocations School has a history of five (5) enforcements from 2009 to 2017, with one (1) penalty assessed in 2010 for \$500. The Fitchburg Wastewater West Plant has a history of three (3) enforcements from 2011 to 2014, with one (1) penalty assessed in 2014 for \$500. The Cristy Corporation has a history of one (1) enforcement in 2011 with no penalty assessed. Lastly, the Booster Pump Station has a history of three (3) enforcements with no penalties assessed from 2011 to 2016. (*See Appendix H*).

Gardner

In Gardner, Block Groups 1, Census Tract 7075, contains eight (8) potential pollution sources, Block Group 2 contains five (5) potential pollution sources, and Block group 3 contains four (4) potential pollution sources. In Block Group 1, four (4) Tier II Toxics use reporting facilities, one (1) wastewater treatment plant, one (1) MassDEP public water supplier, one (1) underground storage tank, and one (1) energy generation and supply (See *Table 23*). In Block 2, one (1) large quantity generator, one (1) Tier II Toxics use reporting facility, one (1) underground storage tank, one (1) EPA facility, and one (1) energy generation and supply were identified (See *Table 23*). In Block 3, one (1) large quantity generator, and two (2) underground storage tanks were identified (See *Table 23*).

According to NEP's survey on enforcement histories there are five (5) Individuals/Facilities that comprise the potential pollution sources. These facilities are:

- Heywood Hospital ("Tier II" toxics use reporting facility, Underground storage tank)
- Gardner Water Department (Wastewater treatment plant, "Tier II" toxics use reporting facility, MassDEP public water supplier)

- Vivitide, LLC (Large quantity generator, EPA facility)
- North Central Correctional Institution (Underground storage tank)
- Gardner Stop & Buy (Underground storage tank).

Heywood Hospital has a history of 10 enforcements from 1997 to 2021, with four (4) penalties assessed for a total of \$2,500. The Gardner Water Department has 17 enforcements from 1996 to 2022, with no penalties assessed. Vivitide LLC, has three (3) enforcements from 2006 to 2021, with one (1) penalty assessed for \$9,000. North Central Correctional Institution has a history of five (5) enforcements from 1996 to 2021, with no penalties assessed. Lastly, the Gardner Stop & Buy has a history of 12 enforcements from 2006 to 2018, with six (6) penalties assessed for a total of \$4,000 (*See Appendix H*).

Athol

In Athol, Census Tract 7031, Block Groups 1 and 2, each have 12 potential pollution sources, and Block Group 1, Census Tract 7073 and Block Group 3, Census Tract 7032 have nine (9) and two (2) potential pollution sources, respectively. In Census Tract 7031, Block Groups 1 and 2, there are two (2) Tier II Toxics use reporting facilities, four (4) MassDEP sites with AULs, one (1) wastewater treatment plant, three (3) underground storage tanks, and two (2) EPA facilities. (*See Table 23*).

According to NEP's survey on enforcement histories there are seven (7) Individuals/Facilities that comprise the potential pollution sources. These facilities are:

- Getty Petroleum Marketing Inc. (Underground storage tank)
- Girardi Distributors Corp (Underground storage tank)
- Pexco LLC (EPA Facility)
- Speedee Oil Change & Tune-Up (Large quantity generator, Underground storage tank)
- Cumberland Farms 2468 (Underground storage tank)
- Athol Memorial Hospital ("Tier II" toxics use reporting facility, Underground storage tank)
- Peterborough Oil Company ("Tier II" toxics use reporting facility, Underground storage tank).

Getty Petroleum Marketing Inc. has a history of three (3) enforcements from 2016 to 2019, with one (1) penalty assessed in 2019 for \$500. Cumberland Farms 2143 has a history of one (1) enforcement in 1997 with no penalty assessed. The Girardi Distributors Corp has a history of three (3) enforcements from 2016 to 2020 with no penalties assessed. Pexco LLC has a history of three (3) enforcements from 1997 to 2004; in 1997 a penalty of \$4,000 was assessed. Speedee Oil Change and Tune-Up has a history of two (2) enforcements from 2006 and 2008 with no penalties assessed. Cumberland Farms 2468, Athol Memorial Hospital and Peterborough Oil Company have all received one (1) enforcement with no penalty assessed in 2005, 2015 and 2006, respectively (*See Appendix H*).

Table 23: Other Potential Sources of Pollution within EJ Boundaries (1 - Mile)

Municipality	EJ Census Tracts	Air Operating Permits	Large quantity generators	Large quantity toxic user	M.G.L. c. 21E Sites	“Tier II” toxics use reporting facilities	MassDEP sites with AULs	MassDEP groundwater discharge permits	Wastewater treatment plants	MassDEP public water suppliers	Underground storage tanks	EPA facilities	Energy generation and supply	Total
ATHOL	7031, Block Group 1 and 2	0	0	0	0	2	4	0	1	0	3	2	0	12
	7032, Block Group 3	0	0	0	1	0	0	0	0	0	1	0	0	2
	7033, Block Group 1	0	0	0	1	3	1	0	0	0	4	0	0	9
GARDNER	7075, Block Group 1	0	0	0	0	4	0	0	1	1	1	0	1	8
	7075, Block Group 2	0	1	0	0	1	0	0	0	0	1	1	1	5
	7075, Block Group 3	0	1	0	0	0	1	0	0	0	2	0	0	4
FITCHBURG	7103, Block Group 2	2	2	4	4	7	3	0	1	0	6	2	1	32
LEOMINSTER	7092.02, Block Group 2	0	0	0	0	0	0	0	0	0	1	0	0	1
LANCASTER	7131, Block Group 4	0	0	0	1	0	0	0	1	1	3	1	0	7

8.2.3 RMA Tool High-Risk Rating Parameters

This section reviews the Project's potential temporary and permanent climate change impacts on the EJ Populations. The assessment has been prepared by running preliminary climate change exposure and risk rating Project inputs on the RMA tool. The RMA is tasked with monitoring and tracking the State Hazard Mitigation and Climate Adaptation Plan ("SHMCAP") implementation process, making recommendations to and supporting agencies on plan updates, and facilitating coordination across State government and with stakeholders, including municipalities, and businesses. The guidelines provided by the tool are structured around three categories - site suitability ("SS"), regional coordination ("RC"), and flexible adaptation pathways ("AP"). These categories assess the adverse climate change impacts of the Project assets on the local and regional level, while also projecting future capacity and design for uncertainty and vulnerabilities to the climate from the Project.

The RMA tool runs the Project asset impacts and generates an overarching climate risks analysis based on three variables: sea level rise and storm surge, extreme precipitation including urban flooding and riverine flooding, and extreme heat. According to the preliminary analysis, the Project is not exposed to sea level rise/storm surge.

The Project asset risk related to extreme heat is high (Tier 3) within all EJ Populations. The Project risk is at high exposure to extreme heat because the Project is not located within 100-ft of an existing water body and activities include tree removal. In addition, the Project's high exposure to extreme heat is because the existing ROW's canopy cover is approximately 10% to 40% of the ROW area. and the Project requires 164 acres of the existing canopy cover to be removed to comply with Transmission Lines Design Standard requirements. The ROW will be maintained as a vegetated corridor with no new impervious development capacity beyond the Project scope, thereby mitigating any additional risk of extreme heat and heat islanding. Notwithstanding the Project location and canopy reduction requirements; the improvements to the conductor capacity proposed among the Project objectives establishes a more resilient and qualified energy delivery service during times of high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change.

Similarly, the Project asset risk related to extreme precipitation - riverine flooding is high in all EJ Populations except in one (1) EJ Population in Leominster. The high exposure to extreme precipitation - riverine flooding is due to the Project location's history of riverine flooding. The Project is within 500-ft of a waterbody and less than 20-ft above the waterbody. The moderate exposure in one (1) of the sites in Leominster is due to the location of the EJ Population. The section of the ROW that goes through this specific EJ Populations is not within a mapped FEMA floodplain [outside of the Massachusetts Coast Flood Risk Model (MC-FRM)] and the Project is more than 500-ft from a waterbody.

Lastly, the Project asset risk related to extreme precipitation - urban flooding is high in all EJ Populations except in two (2) of the EJ Populations, one (1) in Leominster and one (1) in Gardner where the exposure is moderate. The Project has high exposure to extreme precipitation - urban flooding because the maximum annual daily rainfall exceeds 10 inches within the overall Project's useful life, and the existing impervious area of the ROW is between 10% and 50% of the total area. Similarly, the Project has moderate exposure to extreme precipitation - urban flooding in two EJ Populations, one (1) in Leominster and one (1) in Gardner, because the existing impervious area of the Project site is less than 10%.

State, federal, and local regulations will be followed to address all impacts caused during construction, and compensatory flood storage will be provided in accordance with the WPA Regulations for any proposed fill in BLSF.

8.2.4 Feedback from Public Meeting Pursuant to MEPA EJ Public Involvement Protocol

No issues or concerns were raised during the virtual public meeting on July 11, 2022.

8.3. ANALYSIS OF PROJECT IMPACTS TO DETERMINE DISPROPORTIONATE ADVERSE EFFECT

8.3.1. Nature and Severity of Project Impact

The Project will occur within the existing ROW, thereby minimizing adverse environmental impacts. Due to the nature of the Project, outage constraints in the region, and NEP's efforts to reduce impacts to the natural and human environment, Project activities will be sequenced in both the mainline and tap lines. No long-term impacts on soil, bedrock, vegetation, surface water, groundwater, wetland resources or air quality will occur. Any potential sedimentation impacts, and other short-term construction impacts to wetlands and surface waters, will be mitigated through the use of soil erosion and sediment control BMPs and temporary construction mats to protect wetland soils, vegetation root stock, and streams. As part of the Project, an environmental monitor will be part of the Project team to ensure compliance with all regulatory programs and permit conditions, and to oversee the proper installation and maintenance of the soil erosion and sediment control BMPs. Because the nature and severity of project impacts are minimal on all populations, including EJ populations, the Project will not materially exacerbate any existing unfair or inequitable environmental or public health burden impacting the EJ population.

8.3.1.1. Potential Environmental and Public Health Impacts and Proposed Mitigation

Potential environmental and public health impacts of the Project and anticipated mitigation include the following:

Air Quality

Construction-period activities, such as grading, road building, vehicle travel, and other earth-disturbing work may result in a temporary increase in airborne dust. Impacts to air quality will be minimized by managing the control of dust movement with practices such as spreading wood mulch or straw and using water trucks to spray dried soil to keep it moist. The potential for dust generation is only anticipated during the construction period. Post construction, soil will be stabilized and re-vegetated.

In addition, diesel-powered equipment is required to use ultra-low sulfur diesel fuel. Any diesel-powered non-road construction equipment rated 50-horsepower or more that will be used on the Project for 30 days or more will be required to install emission control devices. The impacts from these emissions will be minimal and are not anticipated to cause impacts to public health. Additionally, idling times are limited to five (5) minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts. Vehicle idling is to be minimized during construction activities and be in compliance with the Massachusetts Anti-idling Law, G.L. c. 90 § 16A, c. 111 §§ 142A – 142M, and 310 CMR 7.11.

Water Quality

The Project will incorporate protective and preventative measures to minimize and avoid impacts to water quality. The ROWs cross many wetland areas, streams and rivers. To protect water quality and these sensitive areas, temporary roads will be constructed using construction mats which will be removed following the completion of construction and the wetlands will be restored. In addition, BMPs, such as the use of straw wattles, silt fencing, stormwater management features, and other control measures will be used to prevent soil and other material from being transported into wetlands and streams. Using these BMPs, any impacts to water quality will be negligible and temporary and are not anticipated to cause impacts to public health.

Land Protection and Open Space

There is one (1) EJ Population with Municipal Open Space (Gardner Municipal Golf Course) within the Project ROW specifically, Block Group 1, Census Tract 7075 in Gardner. Access to the golf course will not be impacted by the Project since the activities will be limited to within the existing ROW.

The A1 and B2 Lines pass through several State Forests owned and maintained by DCR. There is one (1) EJ Population within the Project ROW, Block Group 2, Census Tract 7103, located within a DCR Property (Leominster State Forest). This property does not have access roads, trails, or parking for public access. Additionally, Project activities will be limited to the existing ROW. Access to Protected Land and Open Space within EJ Populations will not be impacted.

Noise

The EJ Populations that are most likely to have temporary noise impacts are the communities that are directly within or are located near the ROW. The EJ Populations that have relatively dense development are Block Group 1, Census Tract 7075 in Gardner and Block Group 1, Census Tract 7031 in Athol. The EJ Population in Athol is approximately 100-ft from the Athol Tap Line, whereas the ROW goes through the EJ Population in Gardner. Noise impacts associated with construction-period activities are temporary in nature and expected to be minimal. Where construction will occur adjacent to residences, NEP will notify landowners prior to the commencement of work. Noise-generating activities will be conducted in accordance with any local and state requirements and are not anticipated to cause impacts to public health.

Traffic

Impacts to traffic during the construction of the Project will be minor and intermittent. The work areas will be accessed primarily from NEP-owned access routes or minor town roadways. Within Block Group 2, Census Tract 7103 in Fitchburg, temporary access off Route 2 will be required. NEP will obtain the necessary permits from MassDOT for access. Once on-site, vehicle traffic will be limited to within or in proximity to the ROW. Since the ROW is an un-manned facility, there will be no permanent impacts to traffic patterns or use of existing roadways and no impacts to public health are anticipated from traffic post-construction.

NEP anticipates no long-term construction impacts as the Project will occur within the existing ROW. Any short-term construction impacts will be mitigated through the use of BMPs and completed in accordance with any local, state, and federal regulations.

8.3.2 Comparable Impacts on EJ and Non-EJ Populations

The MEPA Protocol for Analysis of EJ Impacts states that “the Proponent should also analyze whether the impacts on the EJ population are greater or less than those on non-EJ populations. The purpose of this analysis is to assess whether the project is adding impacts to an already burdened area in a “targeted” way that is disproportionate when compared to non-EJ populations.” Due to the nature of this project, there is no disproportionate impact on EJ populations within the DGA.

The Project generally minimizes impacts on all populations by refurbishing an existing line within an existing transmission line corridor. Because of this, the Project does not result in any significant long-term environmental or public health impacts for any population, including EJ populations. Impacts from construction are temporary and insignificant. They will not result in any public health impacts to any population. Other impacts, such as temporary impacts to wetlands, do not directly affect any population or affect any populations disproportionately.

8.3.3. Project Benefits

The Project will benefit from an increased reliability of the overall transmission line by refurbishing the existing structures and wire. On more robust structures and higher strength conductor will be installed which are better suited to withstand storm events and are less prone to experiencing line outages. The new overhead lines will be larger which will allow more electricity to flow during times of high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change. The installation of OPGW will allow better communication between substations, resulting in improved response time during storm-related emergencies and outages, which will increase public safety.

Other benefits of this Project that are not expressly stated includes the reduction of an overall disturbance to adjacent landowners, wetland resource areas, and rare species habitat over time by planning for the future and reducing the likelihood of multiple repeat projects, thereby reducing environmental impacts, and reducing costs to NEP's customers. Addressing the climate change crisis requires a major expansion of renewable energy and the infrastructure necessary to support and deliver that energy. NEP is actively taking steps to ensure that its system is ready to meet this critical challenge. Replacing infrastructure like the A1/B2 Lines helps to accomplish this goal. The replacement lines will have higher kV ratings that will support higher volumes of currently active and forecasted renewable energy resources in this region. This longer-term view is supported by the recently shared initial results of the ISO-NE 2050 study, where an upgrade to 115 kV would be necessary based on the current study assumptions and long-term forecasts for the Commonwealth. Furthermore, the replacement of the Lines will have the added benefit of allowing significantly more renewable energy resources to connect into the system if and when the lines are operated at 115kV. 115kV operation will require work at substations along these lines before it can be implemented. Overall, the Project will improve transmission system infrastructure and comply with comprehensive regional plans for improving electric transmission reliability in New England, for EJ and Non-EJ Populations alike. No long-term impacts on soil, bedrock, vegetation, surface water, groundwater, wetland resources or air quality will occur as a result of this Project. Throughout construction, mitigation measures will be implemented effectively to minimize Project impacts on the environment.

Following the completion of construction, NEP uses standard mitigation measures on all transmission line construction projects to minimize the impacts of projects on the natural environment. These measures include revegetation and stabilization of disturbed soils, ROW vegetation management practices, and vegetation screening maintenance at road crossings and in sensitive areas. Other measures are used on a site-specific basis. NEP will implement standard and site-specific mitigation measures for the Project.

As discussed above, short-term construction related impacts are not anticipated to adversely affect EJ Populations as BMPs will be implemented and construction will follow federal, state and local construction requirements. The Project is not anticipated to result in increased health burdens considered in the vulnerable health criteria. The Project will not result in a new potential pollution source, or negatively impact the environment to further burden the EJ Populations that are affected by current pollution sources. Lastly, there is not a significant disproportionate effect identified with 10% of Project impacts located within the EJ Populations, which represents 10% of the Project ROW, whereas 90% of Project impacts are within non-EJ Populations, which represents 90% of the Project ROW. Therefore, it is the opinion of NEP that the Project will not have unfair or inequitable impacts on the EJ Populations within the designated geographic area.

8.3.4. ANALYSIS OF PROJECT IMPACTS TO DETERMINE CLIMATE CHANGE EFFECTS

The Project team has evaluated the project impacts in regard to Climate Adaptation and specifically the effect on EJ populations as directed by the MEPA protocol. The cities of Leominster, Gardner, and Athol include EJ populations within the DGA of the Project. The MEPA protocol requires evaluation with respect to sea level rise/storm surge and extreme precipitation (urban or riverine flooding), tree clearing and/or land use change (e.g., adding impervious area) and its effect on heat conditions in the area, or other climate related changes that could be affected by the Project.

Structures with concrete caisson foundations that are located within the 100-year flood zone could slightly impact flooding conditions have been evaluated along the ROW. There are several structures proposed with concrete caisson foundations located within the 100-year (i.e., 1% risk) flood zone based on review of available Flood Insurance Rate Maps (FIRMs); however, there are none located within the identified EJ population communities of Leominster, Gardner, and Athol. Compensatory flood storage will be provided as required by the WPA. Additionally, any work areas that will be constructed within the 100-year flood zone will be constructed using temporary timber matting and will not permanently impact the flood zone.

Additionally, access roads and work pads that will be created along the ROW to support construction will use pervious gravel and will include stormwater BMPs to manage and control stormwater runoff. The change from shrub vegetated landscape to gravel roads and work pads is not anticipated to significantly change drainage conditions along the ROW.

As described in section 8.2.3, the project asset risk to extreme heat was high within all EJ neighborhoods, per the RMAT tool. A driver of this risk score is removal of 164 acres of the existing canopy cover to comply with Transmission Lines Design Standard requirements. 24 acres (15% of project total) of tree removal will occur in EJ Census Blocks. An examination of the proposed conditions in all EJ neighborhoods reveals that one section of the ROW, approximately .31 miles long parallel to Park St. in Gardner, proposed tree removal intermittently extends to the existing tree line on the east side of some properties. Where this occurs, shade to these properties in the morning will be reduced, though not fully eliminated, and portions of the property near the ROW may experience a minor short-term increase in temperature. In contrast to these minor potential impacts, the Project provides substantial benefits through improvements to the conductor capacity which establishes a more resilient and qualified energy delivery service during times of high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change.

9.0 GREENHOUSE GAS PROTOCOL

9.1 INTRODUCTION

As part of the MEPA Greenhouse Gas (“GHG”) Protocol, the Executive Office of Energy and Environmental Affairs (“EOEEA”) requires a review of a Project’s potential for emission of greenhouse gases. The Greenhouse Gas Emissions Policy was included in the MEPA review process to fulfill the statutory obligation to take all feasible measures to avoid, minimize, or mitigate damage to the environment by the Project. The Policy requires Projects to undergo review by the MEPA office to quantify the Project’s GHG emissions, along with the impacts of proposed mitigation in terms of emissions and energy savings and identify measures to avoid, minimize, or mitigate such emissions. MEPA GHG Protocol provides guidance to projects that are subject to MEPA review without creating specific new regulatory requirements.

The Project does not have any emissions sources that require analysis under the GHG emission Quantification Protocol. However, the protocol provides the Secretary with discretion, on a case-by-case basis, to require GHG analysis of certain types of other project impacts, including projects that will result in alteration of land greater than 50 acres. If such an analysis is required, the protocol states that the Secretary will advise the proponent of this requirement in the Certificate on the ENF or EENF. In the Project pre-filing meeting, the MEPA Office indicated it would be requiring a GHG analysis of the tree removal aspects of the Project. The MEPA Office did not identify a methodology and NEP agreed to evaluate possible approaches and discuss them in the EENF. NEP is evaluating potential analysis approaches to meet MEPA’s requirement including field analysis, available datasets and research, and emissions mitigation evaluation. One potential analysis would include the following two steps:

1. Estimate the existing carbon stocks using height adjusted land cover values with LiDAR.

Estimation of above ground (trees) and below ground (roots) biomass applies average biomass carbon values for each land cover, as classified in the 2016 1-m High Resolution Land Cover layer. The biomass carbon values are derived from the best available datasets for New England land covers. To account for stand age and density, available LiDAR data would be used to calculate forest height and adjust against the average height of forest trees in the data sets used to assign biomass carbon values. Deviation from the average will be used as a factor to increase or decrease the value assigned to that portion of the land cover. To verify the GHG values, five (5) sample sites will be chosen to be evaluated in the field to confirm assumptions.

2. Carbon Flux Analysis.

Comparison between the existing and proposed land cover would be conducted by calculating the differential between existing carbon values and estimated carbon values taking into account soil type and proposed land cover. The flux would include sequestration rates and growth between the time of construction and the MEPA proposed time horizon of 2050.

10.0 GENERAL TRANSMISSION LINE CONSTRUCTION PROCEDURES

10.1 CONSTRUCTION PROCEDURES

The Project will adhere to conventional transmission line maintenance and construction procedures along with any agency requirements. These procedures are documented in EG-303NE (please refer to *Appendix C*), which outlines NEP policies for ROW access, maintenance and construction BMPs. By consistently implementing these procedures, NEP ensures that transmission lines are constructed by trained personnel in a manner that minimizes potential impacts to the environment, adheres to permit conditions, and meets industry standards. This section summarizes NEP policies and addresses Project-specific construction methods. The discussion presumes that all required permits and authorizations will have been issued, and that throughout construction appropriate consideration will be given to Project implementation in a manner consistent with conditions of permits/authorizations and approved mitigation measures.

10.2 ENVIRONMENTAL COMPLIANCE AND MONITORING

Project activities will be overseen by an “Environmental Monitor,” a qualified environmental professional designated by NEP who can capably monitor on-site construction conditions in relation to permit and regulatory requirements (see *Section 11: Regulatory Compliance*). In addition, NEP’s contractor will designate a Construction Supervisor who will be responsible for daily inspections of work areas during the construction period and will address potential issues related to the environment (i.e., erosion and sedimentation). The Construction Supervisor will be on-site daily to perform required inspections and has “stop work” authority if required due to an observed or reported infraction of the standards and procedures.

Documentation identifying deficiencies of sediment and erosion control measures will be forwarded to the construction supervisor for implementation of corrective measures. As a proactive approach to ensure compliance with environmental permit requirements, all construction personnel will be briefed on the Project’s environmental issues and permit obligations prior to construction. Field staff will also be trained to recognize and respond to changing field conditions as they relate to protecting sensitive areas, wetland resource areas and preventing sedimentation and stormwater runoff. Regular progress meetings will be held to reinforce contractor’s awareness of these issues.

Environmental Monitors will be responsible for monitoring work when activities occur within rare species habitat. Specific functions to be performed by the scientist will be defined during consultation with NHESP.

10.3 CONSTRUCTION STAGES

Once initiated, work will generally follow the sequence listed below. However, certain activities may occur simultaneously within one or more areas of the Project.

- Refreshment of flagging of wetland and other sensitive resources adjacent to work areas and access roads;
- Vegetation management
- Install BMPs;
- Construct, improve or re-establish access roads; maintain as necessary;
- Establish work envelopes;
- Install new/or replacement utility structures;
- Install OPGW/Replace shield wires;
- Remove existing and temporary structures;
- Restore the ROW, as necessary, including revegetation of disturbed areas resulting from the construction process to the greatest practicable extent; and dispose of existing line components;
- Conduct follow-up inspections, as required.

The following sections provide details for the transmission line construction activities.

10.3.1 Refreshment of Resource Area Flagging

Wetlands in the Project area have been delineated and are shown on the *MEPA General Purpose Plans presented in Appendix A: Figures*. Sensitive resources, e.g., rare species habitat and vernal pool habitat, have also been field-identified. Prior to the start of construction, these resources will be rechecked for accuracy and reflagged, as appropriate.

10.3.2 Establish Limit of Disturbance

It is anticipated construction activities and materials will be confined to the LOD as shown on the MEPA General Purpose Plans in *Appendix A*. Prior to the start of construction, these areas will be flagged, as appropriate. The LOD zone represents the additional work area beyond the limits of grading which is also shown on the MEPA General Purpose Plans in *Appendix A*. Within the LOD, equipment access, the placement of temporary BMPs, soil stockpiling and equipment maneuvering is anticipated. In addition, where applicable, tree removals are preliminarily assumed within the LOD zone due to the anticipated secondary impacts from grading activities. Temporary construction matting is assumed to be utilized where access is necessary in wetlands. NEP is working toward solutions to reduce the extent of the LOD throughout the Project ROW. NEP will coordinate with landowners as necessary for temporary construction access as the plans are refined.

Due to the land use constraints within Article 97 lands, construction access will be limited to the easement. These areas will be reviewed as the design advances and modifications to the design, such as adding additional retaining walls, may be necessary to stay within the confines of the easement.

10.3.3 ROW Clearing and Installation of BMPs

Following the ROW vegetation management activities, proper sediment and erosion control devices, such as straw wattles, silt soxx, straw bales, and siltation fencing, will be installed in accordance with approved plans and permit requirements (e.g., OOC), and overseen by NEP's Construction Supervisor. Weekly inspections to evaluate potential erosion and/or sedimentation issues will be conducted, and inspection reports will be submitted until "final stabilization" has been achieved (i.e., 70 percent vegetative cover or at least to pre-construction conditions within the disturbed areas). Photographic documentation will also be performed. The control devices will provide the dual function of mitigating construction-related erosion and sedimentation, as well as serving as a physical boundary to delineate resource areas and to contain construction activities within approved areas.

10.3.4 ROW Vegetation Management

To facilitate construction equipment access along the majority of the ROW and at structure sites, vegetative removal, will be undertaken in select areas, as necessary. This will be done to provide access to proposed structure locations to facilitate safe equipment passage, to provide safe work sites for personnel within the ROW, and to maintain safe and reliable clearances between vegetation and transmission line conductors. Additionally, disturbed areas would be allowed to revegetate with low growing scrub-shrub species, similar to existing vegetation within the maintained portions of the ROW.

As part of an IVM program, NEP's professional arborists oversee the use of mechanical, natural, and chemical (herbicide application) methodologies to effectively manage vegetation along the ROW. Vegetation maintenance of the ROW will be consistent with the approved VMP. Herbicides will be applied by licensed applicators to select target species. Herbicides are never applied in areas of standing water or within designated protective buffer areas associated with wells, surface waters, and agricultural areas. NEP currently utilizes a four- to five-year vegetation maintenance cycle on its transmission ROWs. NEP's ROW

vegetation maintenance practices encourage the growth of low-growing shrubs and other vegetation that provide a degree of natural vegetation control. Vegetation maintenance under and adjacent to the transmission lines and tap lines will be consistent with current ROW procedures. Vegetation management within sensitive areas, including NHESP-designated priority habitat, is outlined in the VMP.

10.3.5 Access Road Reestablishment and Improvements

Access roads along the ROW allow NEP and contractor personnel to construct, inspect, and maintain the existing and proposed transmission line facilities. After careful planning and field investigations, NEP has determined that the majority of the line requires establishing new or improving existing access roads. In locations where maintenance or upgrades are required to support construction activities, gravel may be added to provide a stable and level surface for construction vehicles. It may also be necessary to reestablish roads that were used for the installation and maintenance of the existing lines but have become overgrown. To be conservative, it is assumed that access roads will be maintained after they are improved or reestablished for the Project. NEP's actions and future maintenance of off-ROW access routes will be guided by agreements with individual property owners.

In planning for site access, consideration was given to avoiding the use of access roads within or adjacent to environmentally sensitive areas to minimize the potential impacts associated with construction activities. Due to the extensive wetlands located in portions of the ROW, access across wetland areas and streams could not be avoided. Where upland access is not available, vehicles and equipment will be accommodated by the temporary placement of construction mats. Temporary construction mat access roads will be removed following completion of construction.

Although construction mats displace the weight load of equipment, depressional grooves or furrows (i.e., rutting) in the wetland soil may still result. It is important to note that rutting is not the normal circumstance that results from the use of construction mats. The extent of this temporary impact is a direct function of many factors, including but not limited to soil texture; moisture content; type of construction mat; and time of year. If the rutting is greater than approximately six (6) inches deep, these areas will be re-graded (or backbladed) to reestablish the preexisting topography and maintain existing wetland hydrology. NEP will work with each community's Conservation Commission or authorized representative (i.e., Agent), as well as the USACE, to ensure that the area is in compliance with all performance standards in all applicable wetlands regulations as well as each OOC.

Access road construction will be carried out in compliance with the conditions and approvals of the appropriate federal, state and local regulatory agencies, including the NHESP and MHC. Exposed soils on access roads will be wetted and stabilized, as necessary, to suppress dust generation. Crushed stone aprons will be used at all access road entrances to public roadways to clean the tires of construction vehicles and minimize the migration of soils off-site.

Equipment typically used during the installation and maintenance of access roads will include dump trucks used to transport fill materials to work sites, and bulldozers, excavators, vibratory rollers, backhoes and graders which will be used to place fill materials or make cuts to achieve the proper access road profile. Throughout the Project, pick-up trucks will be used to transport crews and hand-held equipment to work sites. Low-bed trailers will be used to transport tracked and other off-road equipment, which cannot be operated on public roadways to the work site.

10.3.6 Establish Work Envelopes and Staging Areas for Construction

Construction work envelopes, pull pads, and guard structure work envelopes (locations to be determined) will support the equipment needed to complete the structure installation, replacement and improvements. Work envelopes and staging areas (*shown on MEPA General Purpose Plans*) are primarily within existing ROW, but work envelopes for structures 466, 467, 468, 469, 493, 502A, 503A, 504, 537-1, 539, (Westminster); 598, 550, 599, 606, 555, 607, 608, 556, (Leominster); 597, 598, 599, 600, 601 (Sterling); CHE 97, CHE 98, CHE 99 (Chestnut Hill SS, Athol), are partially or completely off the ROW.

Construction work envelopes will vary in size based on various factors, for example specific activities and equipment required at each location and topographical constraints. In general, the work envelopes have been designed to be up to approximately 157-ft by 80 to 100-ft depending on the width of the ROW and extent of grading required to create the level work area and provide adequate space for the typical construction associated with the project scope of work as shown on the MEPA General Purpose Plans.

The actual area needed to support equipment will depend on the equipment needs at that particular location, as well as site specific conditions. Grading and/or stabilization may be required within work envelopes to provide a level work surface for construction equipment and crews in upland areas. Anticipated limits of disturbance associated with grading activities are identified on the MEPA General Purpose Plans. NEP designed the Project to avoid permanent impacts to wetland resource areas to the maximum practicable extent, but since this Project consists of maintenance and improvements to an existing alignment, permanent and temporary impacts could not be avoided. Where impacts to BVW are required for work envelopes, construction mats will be temporarily placed over wetland areas to distribute equipment loads and minimize disturbance to the wetland and soil substrates. Proposed construction mat locations are shown in the MEPA General Purpose Plans. Temporary construction mats will be removed following completion of construction.

Any area identified by NEP's archaeological consultant as a potentially significant archaeological resource will be avoided if safe/practicable alternatives are available. NEP will conduct investigations for archaeological resources in accordance with a Massachusetts State Archaeologist's permitted plan prior to any site preparation or excavation.

10.3.7 Installation of Foundations and Replacement and Installation of Structures

Equipment typically used during the installation of foundations and the replacement of structures includes excavating equipment such as backhoes and excavators, rock drills/augers and concrete trucks. Suspension structures will be installed using the "Direct Embed" construction method, and Deadend structures will be installed using the "Self-Supporting" construction method, also referred to as caisson foundations, described as follows.

Table 24: Installation of Foundations and Replacement and Installation of Structures

<p>Direct Embed:</p>	<p>The installation of a direct embed structure (e.g., tangent or in-line structures) involves the excavation of a hole, the installation of a vertically placed steel culvert (corrugated pipe), placement of the new pole within the culvert, and backfill of the culvert with stone around the pole. The fill needed for these structures is the backfill required within the culvert above existing surrounding grade. Assuming the average direct embed foundation (i.e., culvert) will be installed flushed with the surrounding grade per NEP Standards, no fill above ground will result. The area affected by each foundation, assuming a 72-inch diameter culvert, is approximately 28 square feet. Guy wires and anchors will be installed as required by code.</p>
<p>Self-Supporting (Caisson Foundations):</p>	<p>The installation of a self-supporting structure (e.g., angle and dead-end structures) involves drilling a vertical subsurface temporary casing shaft (oversized to fit the permanent casing), followed by the installation of the permanent casing within the temporary casing, the installation of the steel reinforcing cage (tied rebar), the placement of anchor bolt clusters (to attach the structure to the foundation), pouring of concrete to form the foundation within the permanent casing (also called a caisson foundation), backfilling the void between the permanent and temporary casing as the temporary casing is removed, bolting the new structure to the foundation, and final grading around the base of the structure. Assuming the average caisson foundation protrudes approximately 4-ft above surrounding grade, each 10-ft diameter caisson would result in approximately 316 cubic feet of fill per pole.</p>

In general, any excavated material will be placed next to the excavation. Steel culvert casings are used to support the sides of excavations. Once the structure has been properly positioned and plumbed within the hole, the excavation will be backfilled with clean three-quarter inch minus gravel and tamped to provide structural integrity. Following the backfilling operation, any remaining excavation spoils will be spread over upland areas or removed from the site.

Handheld equipment, including shovels and vibratory tampers, are used during the backfilling of foundations and structures. Dump trucks are used to remove excavation spoils from the work site if necessary. Cranes are used to erect structures, and bucket trucks or a crane with a basket are used to lift the linemen to the aerial work zone. Tracked equipment that cannot be operated on public roadways will be transported to the work site by means of a low-bed trailer. Poles will be comprised of two (2) to three (3) sections and will be transported to the site via tractor trailers.

Dewatering may be necessary during excavations for foundations near wetland areas. At all times dewatering will be performed in compliance with the EG-303NE guidelines and BMPs. If there is adequate vegetation in upland areas to function as a filter medium, the water generally will be discharged to the vegetated land surface. Where vegetation is absent or where slope prohibits, the water will be pumped into a hay bale or silt fence settling basin located in an upland area. The pump intake will not be allowed to rest on the bottom of the excavation throughout dewatering. The basin and all accumulated sediment will be removed following dewatering operations and the area will be seeded and mulched.

10.3.8 Conductor and OPGW Installation

Following structure upgrades, the OPGW will be replaced by utilizing “Tension Stringing Methods” in accordance with Institute of Electrical and Electronics Engineers (“IEEE”) 524 and National Grid

Transmission Specifications Document # SP.06.01.301. The wire will be installed in sections varying in length from a single span to two (2) miles or more. The equipment that typically will be used during the conductor and shield wire installation operation includes stringing blocks; a multi-reel rope puller; a single reel hardline puller; a bundle tensioner; conductor reel stands; bulldozers; and cranes.

The wire stringing equipment is used to pull the conductor and shield wire through the stringing blocks one wire at a time. First the insulators and stringing blocks will be installed on the structures. Next the ropes (one per phase and shield wire) will then be pulled from structure to structure by either equipment on the ground or with a helicopter. The rope will then be used to pull in the hard line (wire rope) from the puller to the wire reels and the puller will then pull in each shield wire or phase conductor bundle. At no time during installation will the wire be permitted to come into contact with the ground. Once the wire is in place, it will be pulled up to final sag and permanently affixed to the new structures. This process will be repeated for each section of line. During the stringing operation, temporary guard structures or boom trucks with guard attachments will be placed at road and highway crossings, and at crossings of existing utility lines, to ensure public safety and the continued operation of other utility equipment. The location of the temporary guards is currently under review.

To minimize disturbance to soils and vegetation, existing access roads will be used to the fullest extent possible in the placement of wire stringing equipment and materials. The wire reels and other large material items will be transported to and along the ROW using large trucks and tractor trailers. Pickup trucks will be used to transport work crews and small materials to work sites.

10.3.9 Restoration of the ROW

Restoration efforts will be completed following the construction operations. Construction debris will be removed from the Project site and disposed of properly. Disturbed areas around structures and other graded locations will be seeded with an appropriate seed mixture and/or mulched to stabilize the soils in accordance with applicable regulations. Construction work envelopes will be loamed and seeded where necessary (i.e., where grading is proposed). Temporary sedimentation control devices will be removed following the stabilization of disturbed areas; straw bales, straw wattles, or similar may be removed or left in place after the stakes are pulled and the strings cut.

Wetland restoration areas will be monitored until 75 percent vegetative cover is achieved or in accordance with applicable agency requirements.

10.3.10 Replication Area Construction

Where wetland replication is undertaken, construction will have oversight conducted by qualified environmental consultants. Replication areas will be monitored, and corrective actions undertaken as necessary to ensure that within two (2) growing seasons there will be a 75 percent vegetative cover of indigenous wetland plant species. All work will be completed in compliance with applicable permit conditions. Wetland replications will be conducted as required under the WPA Regulations. The locations of wetland replication areas are currently under review.

10.4 CONSTRUCTION TRAFFIC AND EQUIPMENT

10.4.1 Construction Traffic

Access to the ROW for construction equipment will typically be gained from public roadways crossing the ROW in various locations along the route and adjacent existing off-ROW access roads. Because each of the construction tasks will occur at different times and locations over the course of the construction, traffic will be intermittent at these entry roadways. Traffic will consist of various vehicle types ranging from pick-up trucks to heavy construction equipment.

NEP’s contractor will coordinate closely with MassDOT to develop acceptable traffic management plans for work within state highways. NEP will coordinate with local authorities for work on local streets and roads. At locations where construction equipment will be staged in a public way, the contractor will follow a pre-approved work zone traffic control plan. Prior to use of off-ROW access roads, permission will be obtained from private landowners.

10.4.2 Construction Equipment

Table 27 lists the equipment that is likely to be required to install the new overhead transmission lines and to remove the existing structures. Any diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above to be used for 30 or more days over the course of construction will either be USEPA Tier 4-compliant or will be retrofitted with USEPA-verified (or equivalent) emission control devices such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) and installed on the exhaust system side of the diesel combustion engine. NEP requires the use of ultra-low sulfur diesel fuel in its diesel-powered construction equipment and limits idling time to five (5) minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts. Vehicle idling is to be minimized during construction activities, in compliance with Massachusetts Anti-idling Law, G.L. c. 90 § 16A, c. 111 §§ 142A – 142M, and 310 CMR 7.11.

Table 25: Typical Overhead Transmission Line Construction Equipment

Construction Phase	Typical Equipment/Materials Required
Site Preparation	Pickup and other small trucks Flatbed trucks, brush hogs, bulldozers, bucket trucks for tree canopy trimming, woodchippers Erosion and sediment control devices Equipment for tree trimming and/or cutting
General Activities	Vehicles to transport personnel Side booms, forklifts and cranes to handle materials Trucks to haul sanitary/solid wastes from construction sites Pickup trucks for supplies Portable toilets / office trailers
Access Roads	Bulldozer or front-end loader Excavators / grader Dump trucks for hauling crushed stone or gravel Vibratory rollers Pickup or stake body trucks for culverts, tooling and personnel
Structure Upgrades	Trucks to haul out old hardware (roll off dumpsters) Cranes Trucks with welding equipment to cut steel supports or components Dump trucks to haul smaller components, gravel or spoils Digging equipment such as back hoes or excavators

Installation of Replacement and New Structures	<ul style="list-style-type: none"> Bulldozer or front-end loader All-terrain vehicles (ATVs) Tracked carrier (marooka) or a Skidder Flatbed trucks and tractor trailers for hauling structure components Augers Excavators and backhoes Cranes Bucket trucks Conductor pulling and tensioning rigs Helicopters Large-bore foundation drill rigs for caisson foundations Concrete trucks Pickups and other small trucks
Restoration	<ul style="list-style-type: none"> Pickup and other small trucks Excavators and backhoes Skidsteer/bull dozer Dump Trucks

10.5 SAFETY AND PUBLIC HEALTH CONSIDERATIONS

NEP will construct and maintain the facilities for the proposed Project so that the health and safety of the public are protected. This will be accomplished through adherence to all federal, state, and local regulations, and industry standards and guidelines established for protection of the public. Specifically, the proposed Project improvements will be designed, constructed, and maintained in accordance with the National Electric Standards Committee standards. The facilities will be designed in accordance with sound engineering practices using established design codes and guides published by, among others, the IEEE, the American Society of Civil Engineers (“ASCE”), the American Concrete Institute (“ACI”), and the American National Standards Institute (“ANSI”). Practices which will be used to protect the public during construction will include, but not be limited to, establishing traffic control plans for construction traffic on busy streets to maintain safe driving conditions, restricting public access to potentially hazardous work areas, and use of temporary guard structures at road and electric line crossings to prevent accidental contact with the conductor during installation.

Following construction, all transmission structures will be clearly marked with warning signs to alert the public of potential hazards if climbed or entered. Throughout the Project design and implementation sequence, NEP will evaluate locations that may require the installation of signs, and/or other types of barriers (e.g., large stones) at access points from public roads.

11.0 REGULATORY COMPLIANCE

11.1 INTRODUCTION

NEP has incorporated extensive measures into the design to avoid and minimize Project impacts to the greatest practicable extent, and where impacts cannot be avoided, NEP will implement appropriate mitigation. This section provides a general overview of the Project's approach to complying with the jurisdictional regulations of state and federal regulatory review agencies. Specific impact areas were presented previously in *Sections 3 through 8*, and mitigation measures are addressed in *Section 12: Mitigation Overview and Section 61 Findings*.

11.2 STATE REGULATIONS

11.2.1 Section 401 Water Quality Certification

The wetlands along the ROW are subject to the jurisdiction of Sections 401 and 404 of the federal Clean Water Act (CWA), 33 U.S.C. § 1251 et seq. The CWA establishes the basic federal structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.

A Section 401 Water Quality Certification is required under the CWA for certain activities in wetlands and waters, but the law gives states the authority to review projects that must obtain federal licenses or permits and that result in a discharge to state waters. The purpose of the Massachusetts Section 401 review is to ensure that a project will comply with state water quality standards and other appropriate requirements of state law. Statutory authority for this certification is stated in the federal Clean Water Act, 33 U.S.C. § 1341, and the Massachusetts Clean Water Act, G.L. c. 21, §26-53. Regulatory authority for this certification is located at 314 CMR 9.00. Water quality standards referenced in the certification are found in 314 CMR 4.00.

This Project requires an Individual Section 401 Water Quality Certification, primarily due to the anticipated "Take" determination from NHESP under MESA. The Project also requires a Water Quality Variance due to the placement of temporary construction matting within wetlands that are located within 400-ft of the OHWM of a Class A Surface Water. Applications will be filed with MassDEP for review under 314 CMR 9.00. MassDEP evaluation criteria for applications are the incorporation of all appropriate and practicable measures for avoiding and minimizing impacts to wetland resource areas. The Project's design avoids, minimizes, and mitigates adverse impacts, as described in this section and *Section 12*.

11.2.2 Massachusetts Wetlands Protection Act

The Project will require approvals under the WPA and the implementing regulations at 310 CMR 10.00 . These regulations govern state-wetland resource areas that include BVW, RA, Bank and BLSF. Project-related impacts to these resource areas require an official finding of approval by the appropriate jurisdictional authority in the form of an OOC.

The WPA and its regulations are administered by municipal Conservation Commissions and MassDEP. Conservation Commissions are empowered under state law to issue OOCs. MassDEP has the authority to intervene in a project and to act on appeals of the OOCs. Permit applications (Notices of Intent ("NOIs")) will be filed with Conservation Commissions in Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling detailing the proposed asset improvements, the short-term and long-term impacts, and the proposed mitigation for those impacts. The wetlands review process is focused on how the Project and the proposed mitigation conform to the performance standards for each affected WPA Resource Area.

In the communities with local wetlands bylaws, the application and hearing process will also address how the Project elements and proposed mitigation measures conform to the requirements of those town bylaws. NEP will coordinate with the Conservation Commissions of these communities such that the final mitigation package appropriately addresses local requirements.

The sections below summarize the Project's compliance with the WPA's general performance standards. The mitigation described herein and in the following subsection, Federal Regulations, will be used as the basis for compliance with state and federal wetland law.

11.2.2.1 Consistency of the Project with WPA - Limited Project (310 CMR 10.53(3)(d))

As outlined in 310 CMR 10.53(3)(d), the construction, reconstruction, operation and maintenance of underground and overhead public utilities is considered a "limited project" that may, under certain circumstances, be permitted without meeting the performance standards. These include the ability of the Project to avoid impacts, minimize unavoidable impacts, and mitigate for those impacts. It is within the issuing authority's discretion to consider the magnitude of the alteration and the significance of the project site to the interests identified in the WPA; the availability of reasonable alternatives to the proposed activities; the extent to which the adverse impacts are minimized; and the extent to which mitigation measures, including replication or restoration are provided to contribute to the protection of the interests identified in the WPA. In addition, no limited project may be permitted if there will be an adverse impact to specified habitat sites of rare vertebrate or invertebrate species.

The proposed work associated with this Project occurs within an existing approved ROW. In accordance with the limited project provisions of the WPA, the Project may be permitted in accordance with the following conditions as well as any additional conditions deemed necessary by the issuing authority:

- the issuing authority may require a reasonable alternative route with fewer adverse effects for a local distribution or connecting line not reviewed by the Energy Facilities Siting Board;
- best available measures shall be used to minimize adverse effects during construction; and
- the surface vegetation and contours of the area shall be substantially restored.

An alternatives analysis has been conducted by the Proponent, as described in Section 2 of this Project Narrative. NEP is confident that the proposed Project offers the most reasonable and balanced alternative to addressing the system's needs. In terms of minimizing adverse effects during construction, *Sections 4 and 10* discusses the construction practices utilized to minimize impacts to wetland resource areas as well as to ensure that areas temporarily impacted by construction are substantially restored. In addition, NEP is committed to working with federal, state, and local regulatory agencies and providing an appropriate range of mitigation measures, including, as appropriate, replication of permanent fill impacts; wetland restoration; wetland habitat enhancement and/or permanent land preservation (see *Section 12*).

11.2.2.2 Inland Bank (310 CMR 10.54)

Bank is defined by 310 CMR 10.54(2)(a) as "the portion of the land surface, which normally abuts and confines a water body." Where Inland Bank is encountered within the Project area, the following applicable WPA general performance standards apply:

Where the presumption set forth in 310 CMR 10.54(3) is not overcome, any proposed work on a Bank shall not impair the following:

- the physical stability of the bank;
- the water carrying capacity of the existing channel within the Bank;
- ground water and surface water quality;

- the capacity of the Bank to provide breeding habitat, escape cover and food for fisheries; and
- the capacity of the Bank to provide important wildlife habitat functions.

Temporary alteration of a small amount of Inland Bank may result from the placement of construction mats across stream banks in construction work areas and along access points. Using construction mats for this purpose is intended to minimize stream bank impacts by avoiding compaction, bank erosion, and loss of vegetation which would result in permanent impact to the physical stability of the banks or the water carrying capacity of the existing channels. These areas are anticipated to be restored when construction is completed. Permanent impacts will occur to a small segment of Bank where tree removal will result in a conversion of PFO to PSS.

The proposed Project is not anticipated to impact groundwater or surface water or the capacity of the Banks to provide breeding habitat, escape cover, food for fisheries, or reduce the capacity of the Banks to provide important wildlife habitat functions following completion of the Project.

11.2.2.3 Bordering Vegetated Wetland (310 CMR 10.55)

BVW, as defined by 310 CMR 10.55(2) (a) and (c), are “freshwater wetlands that border on creeks, rivers, streams, ponds, and lakes.” BVW is prevalent throughout the Project area. Where BVW occurs, the following WPA general performance standards apply:

- Where the presumption set forth in 310 CMR 10.55(3) is not overcome, any proposed work in a BVW shall not destroy or otherwise impair any portion of said area.
- Notwithstanding the provisions of 310 CMR 10.55(4) (a), the issuing authority may issue an OOC permitting work which results in the loss of up to 5,000 sf of BVW when said area is replaced in accordance with the following general conditions and any additional, specific conditions the issuing authority deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost:
 - o the surface of the replacement area to be created (“the replacement area”) shall be equal to that of the area that will be lost (“the lost area”);
 - o the ground water and surface elevation of the replacement area shall be approximately equal to that of the lost area;
 - o the overall horizontal configuration and location of the replacement area with respect to the bank shall be similar to that of the lost area;
 - o the replacement area shall have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area;
 - o the replacement area shall be located within the same general area of the water body or reach of the waterway as the lost area;
 - o at least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two (2) growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods; and
 - o the replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in Part III of 310 CMR 10.00.

The Project was designed to avoid or minimize adverse impacts to the extent practicable. However, since these are existing facilities in an existing alignment, temporary and permanent alternation to BVW will occur, including a small amount of permanent fill. Unavoidable temporary impacts to BVW will occur in work areas and along access routes during construction. These impacts are primarily associated with the use of stabilization techniques (e.g., construction mats, stabilizing material) which minimize impacts while

allowing necessary work within resource areas to occur. Disturbed areas will be restored to their original condition.

11.2.2.4 Land Under Water Bodies and Waterways (310 CMR 10.56)

LUW is defined by 310 CMR 10.56(2)(a), as “the land beneath any creek, river, stream, pond or lake.” The Project crosses jurisdictional LUW at numerous locations during its length. LUW is associated with several perennial and intermittent streams and water bodies within the Project area. Where LUW is encountered, the following applicable WPA general performance standards apply:

- Where the presumption set forth in 310 CMR 10.56(3) is not overcome, any proposed work within LUW shall not impair the following
 - o The water carrying capacity within the defined channel, which is provided by said land in conjunction with the banks;
 - o Ground and surface water quality;
 - o The capacity of said land to provide breeding habitat, escape cover and food for fisheries; and
 - o The capacity of said land to provide important wildlife habitat functions.

Two (2) concrete caisson foundations are proposed within LUW in the Crystal Lake Tap in Gardner. The majority of streams and open water can be spanned or avoided by conducting work from either side of the waterbody. In several locations, temporary impacts to LUW due to the placement of construction mats was unavoidable. It is anticipated that approximately 32,206 sf of temporary impacts to LUW will occur due to the use of construction matting for access and/or work areas.

11.2.2.5 Land Subject to Flooding (310 CMR 10.57)

BLSF as defined by 310 CMR 10.57(2)(a), is “an area with low, flat topography adjacent to, and inundated by, flood waters rising from creeks, rivers, streams, ponds or lakes”. ILSF as defined by 310 CMR 10.57(2)(b), is “an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches”. BLSF and ILSF are present throughout the Project area. Where BLSF is encountered, the following WPA general performance standards apply:

- Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within BLSF, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows.
- Work within BLSF, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.
- Work in those portions of BLSF found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which a Notice(s) of Intent is filed or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 sf (whichever is less) or land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat function. Additional alternations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.

New and/or re-established access roads within BLSF will be over-excavated and stabilized with stone rather than placing stone on top of the existing substrate so they are the same grade and there will be no loss of

flood storage capacity. Placement of foundation caissons will result in a loss of a small amount of flood storage capacity. Where necessary, lost flood storage volume will be replaced in locations not previously used for flood storage and will be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation. Compensatory flood storage areas will be located within the same reach as the lost storage volume and will have an unrestricted hydraulic connection to the waterway, to the extent possible. Compensatory flood storage will be designed to allow for the re-establishment of wet meadow and scrub shrub wetland or transitional wetland/upland environments that will contribute to wildlife habitat values.

11.2.2.6 Riverfront Area (310 CMR 10.58)

As noted in *Section 4: Wetlands and Wildlife*, 68 perennial streams are located within the Project area. Each of these perennial streams has a jurisdictional 200-ft RA. Pursuant to 310 CMR 10.58(4), where this 200-ft RA occurs within the Project area, the following WPA general performance standards apply:

***Protection of Other Resource Areas.** The work shall meet the performance standards for all other resource areas within the riverfront area as identified in 310 CMR 10.30 (coastal bank), 10.32 (salt marsh), 10.55 (BVW), and 10.57 (Land Subject to Flooding). When work in riverfront area is also within the buffer zone to another resource area, the performance standards for the riverfront area shall contribute to the protection of the interests of G.L. c. 131, s. 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within riverfront area (310 CMR 10.58(4)(a)).*

***Protection of Rare Species.** No project may be permitted within the riverfront area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or which will have any adverse effect on vernal pool habitat certified prior to the filing of the Notice of Intent (310 CMR 10.58(4)(b)).*

***Practicable and Substantially Equivalent Economic Alternatives.** There must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in G.L. c. 131, s. 40. 310 CMR 10.58(4)(c).*

The existing ROW within the RA is currently maintained as a working ROW and has been cleared and is maintained in accordance with an approved VMP and local, state, and federal law and regulation. Maintenance of existing structures occurs on a routine basis as necessary, also in compliance with local, state, and federal law and regulation.

The Project will result in temporary disturbance and permanent impacts to portions of the RA along the Project route. Temporary disturbance in RA will result from the placement of construction mats to establish stable work and access areas. Permanent impacts will result from structure installations, access road construction and conversion of forested habitat to scrub-shrub and emergent habitat. A portion of the construction work envelopes will be loamed and seeded to allow vegetative cover to become reestablished. NEP recognizes that maintaining/reestablishing the natural vegetation within the RA is critical to protecting water supplies, providing flood control, preventing pollution and protecting wildlife and fisheries habitat. NEP will coordinate with the Conservation Commissions of the communities such that the final mitigation package appropriately addresses state and local requirements.

The Project has considered the RA performance standards in the following ways.

Protection of Other Resource Areas Within RA: To the extent practicable, the Project meets the performance standards for Bank (no impact), BLSF (no net loss of flood storage capacity), and BVW (restoration and mitigation proposed for temporary and permanent impact).

Protection of Rare Species: Project activities within the RA will occur within habitat for a protected species (one (1) amphibian, two (2) reptiles, two (2) birds and two (2) invertebrates). The consultation process has been initiated with NHESP, as described in *Section 5*. Although impacts will be avoided and minimized to the maximum extent practicable, without compromising the safety of Project construction and future maintenance personnel, there is some potential for a “take” to occur due to road improvements. A MESA Checklist will be required and a CMP may also be necessary. The final determination will be based on the feedback and direction received from NHESP. If a CMP is required, several potential mitigation options are available, as described in *Section 5*. Coordination with NHESP will ensure that the proper approach is used, and a protection plan for all Project related state-listed species is provided if needed.

Practicable and Substantially Equivalent Economic Alternatives: The WPA general performance standards for RA require that the applicant prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed Project with less adverse effects on the interests identified in the WPA. *Section 2* discusses the alternatives evaluated to minimize impacts to wetland resource areas. This information will be provided as part of the NOIs prepared for the Project.

No Significant Adverse Impact: Impacts are fully described in *Section 4* and proposed mitigation measures are addressed in *Section 12*. Temporary impacts where necessary for installation of linear site-related utilities are allowed within the RA, provided the area is restored to its natural conditions (310 CMR 10.58 (4) (d) 1.a.). Although RA impacts resulting from the proposed Project are primarily temporary land disturbance, all disturbance will be temporary in nature. Proposed tree removal will result in conversion of forested habitat to scrub-shrub and emergent habitat. The majority will be restored to existing ROW conditions, most of which has been historically affected by the safe operation of the transmission facilities. Unavoidable permanent impacts include the improvement of existing access routes (expansion and grading) to ensure safe access to existing and proposed structures, and direct installation of replacement structures.

To offset temporary construction impacts, protective measures and BMPs will be in place to avoid and minimize impacts. The approach for accessing the site, establishing work areas and performing construction activities is discussed in detail in *Section 10: General Transmission Line Construction Procedures*. The proposed Project will not result in a significant adverse impact or impairment or reduce the capacity of the RA to provide important wildlife habitat functions.

11.2.2.7 Isolated Vegetated Wetlands (IVW) and Isolated Land Subject to Flooding (310 CMR 10.57)

ILSF is defined at 310 CMR 10.57(2)(b) as an isolated depression or a closed basin that serves as a ponding area for run-off or high ground water which has risen above the ground surface. Isolated wetlands are not jurisdictional resource areas under the WPA unless they hold enough water to meet the definition of ILSF (310 CMR 10.57(2)(b)). During field investigations, wetlands were not delineated beyond the utility ROW. Off-ROW hydrologic connections were assumed for wetlands located on the border of the ROW.

11.2.2.8 Wildlife Habitat Evaluations (310 CMR 10.60)

A wildlife habitat evaluation was completed pursuant to 310 CMR 10.60 and the procedures and methods detailed in MassDEP’s Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands.

Requirements for completing wildlife habitat evaluations depend on the type of wetland resource area impacted and the magnitude of impact. As part of the MassDEP Guidance document, two forms are typically used for Wildlife Habitat Evaluations – Appendix A and Appendix B. Appendix A is a “simplified” evaluation generally used for projects with limited resource area impacts. Appendix B is a more detailed evaluation generally used for evaluating projects with larger impacts, project locations within VP habitat, mapped “Habitat of Potential or Statewide Importance” and/or other activities specified on the Appendix A form.

Appendix B evaluations were conducted for the Project because of the nature of the Project and the cumulative impacts to jurisdictional resource areas. The wildlife habitat evaluation is summarized in *Section 4: Wetlands and Wildlife*, and applicable portions are presented in *Appendix F*. Some habitat functions associated with forested wetland will be permanently altered as a result of the proposed Project, but they will be replaced by the increasingly scarce scrub-shrub habitat. Consequently, the proposed Project will not result in a significant adverse impact or impairment or reduce the capacity of the RA to provide important wildlife habitat functions.

11.2.3 Massachusetts Stormwater Standards

MassDEP applies the Massachusetts Stormwater Management Standards pursuant to the wetlands regulations (310 CMR 10.00) and the water quality regulations (314 CMR 9.00) relating to stormwater. The Stormwater Standards define 10 performance management standards for development and redevelopment projects. Minimal impervious surfaces are proposed for the Project. Portions of the Project subject to the Stormwater Management Standards are limited to new caisson foundations.

Although the proposed work is considered to be eligible for limited project status, NEP will meet the stormwater standards to the maximum extent practicable. NEP will coordinate with engineers, regulators and local conservation commissions to develop stormwater management plans for these areas, as appropriate.

11.2.4 Surface Water Discharge Permit

Due to earth disturbing activities of more than one (1) acre, this Project will require a federal NPDES Construction General Permit (“CGP”) and associated coverage pursuant to the Surface Water Discharge regulations (314 CMR 3.00) specifically 314 CMR 3.06. The NPDES CGP requires filing an NOI that provides information on the site and identifies the site’s general operator, and development of a SWPPP that includes appropriate BMPs to minimize pollutant discharges.

The Project will comply with the requirements of the NPDES CGP. As a component to this compliance, a site-specific SWPPP will be prepared and implemented throughout the Project’s construction and restoration phases. Implementation of this plan will include extensive use of erosion and sediment control measures designed to minimize site disturbance and prevent opportunities for sedimentation to occur offsite or toward wetland resource areas. The SWPPP will be included in each NOI, along with Bureau of Water Resources Surface Water Discharge (NPDES) Permitting Program WM 15 permit application and it is anticipated that the requirements of the SWPPP will be included in the OOC issued by each community within the Project area.

11.2.5 Waterways Permitting

The Project crosses several rivers and streams that are subject to waterways licensing jurisdiction by MassDEP under Massachusetts General Law c. 91 and the implementation regulations, 310 CMR 9.00. However, as described below, all of the jurisdictional Project-related crossings are exempt from licensing.

11.2.5.1 Jurisdictional Crossings

Chapter 91 geographic jurisdiction includes non-tidal rivers or streams “on which public funds have been expended for stream clearance, channel improvement, or any form of flood control or prevention work... except for any portion of any such river or stream which is not normally navigable during any season, by any vessel including canoe, kayak, raft, or rowboat...” 310 CMR 9.04(1)(e). All “structures” in these rivers and streams are subject to waterways licensing under 310 CMR 9.05(i). A “structure” is defined as “any man-made object which is intended to remain in place . . . over . . . waterways.” 310 CMR 9.02. Thus, MassDEP requires a c. 91 license for electric transmission crossings over rivers and streams even where there is no physical structure in the stream or river.

Perennial Streams: Based on field reviews, 68 perennial streams were identified within or immediately adjacent to the Project ROW. All perennial stream crossings that intersect with the A1/B2 ACR were assumed, for purposes of determining c. 91 jurisdiction, to be “normally navigable” by canoe, kayak, raft or rowboat.

Intermittent Streams: 60 intermittent streams were identified within or immediately adjacent to the Project ROW. All other streams delineated within or immediately adjacent to the ROW are either not shown on the most recent USGS topographic maps as intermittent, or are depicted as intermittent waterways. According to the field reviews conducted in 2020, bank heights and width are variable.

To determine whether intermittent streams were “normally navigable” under §9.04(1)(e), bank height, width and water depth were all considered. In particular, intermittent streams were determined to be navigable if all of the following criteria were met:

- Discernable channel/bank
- Bank width of three feet or greater
- Water depth of twelve inches or greater

Based on field reviews to date, many of the intermittent streams within the Project ROW meet these criteria. Of the 128 streams reviewed, there are 66 occurrences of tree removal intersecting intermittent streams and 100 occurrences of tree removal intersecting perennial streams. There are 47 occurrences where work envelopes/pull pad envelopes intersect intermittent streams and 26 occurrences where these activities intersect with perennial streams.

11.2.5.2 Exempt Crossings

All of the jurisdictional crossings listed above are expressly exempt from c. 91 if they are covered by a final wetland OOC and meet the following related tests: they are constructed and maintained in accordance with the NESC and do not reduce the space available for navigation (310 CMR 9.05(3)(g)).

All of the Project crossings are exempt from c. 91 licensing because they will require an OOC from the applicable local Conservation Commission. Moreover, the Project crossings will be “overhead wires ... constructed and maintained in accordance with the National Electrical Safety Code,” as all electrical transmission lines are required to be constructed and maintained in accordance with all applicable legal standards, including the NESC and 220 CMR 125.00 Installation and Maintenance of Electric Transmission Lines. Finally, due to the significant increase in the height of the replacement structures, there will be an increase in the crossing height above the waterway surface and thus will not “reduce the space available for navigation.”

In sum, the required OOCs for this Project will fulfill the requirements of 310 CMR 9.05(3)(g) to exempt all of the crossings of navigable water streams from c. 91 licensing requirements.³⁴

11.2.6 Massachusetts Department of Transportation

MassDOT is responsible for the Permit to Access State Highway/Non-Municipal Utility Permits for crossing over of state roads with utility lines and for Permanent Access Permit with the Highway Layout.³⁵ The proposed Project's impacts relative to MassDOT are associated with the installation of new overhead wires across state roadways by a non-municipal utility, a proposed permanent access from a MassDOT roadway, and permanent structure installations within the highway layout. The installation could temporarily affect traffic flow of the roadway but does not involve physical modifications to the roadway or roadway ROW. NEP will comply with all required measures to ensure a safe environment for traffic flow and construction crews in and around the roadways.

BSC on behalf of NEP conducted a consultation with MassDOT on 08/25/22 to discuss change in alignment due to removal of existing structure 537-1, two proposed structures located within state highway layout along Depot Road, and the proposed access road to Great Wolf Lodge.

As a result of the consultation, it has been identified:

- A clearing permit can be submitted for any required clearing on MassDOT property for the realignment.
- Continued consultation required for the proposed structures within the state highway layout, MassDOT Engineer to follow up with MassDOT Operations regarding the access rights to the area.
- New access from Great Wolf Lodge requires roadway plans including proposed tree removals to be reviewed when permanent access permit is submitted. MassDOT also requires a chain fence gate at the property line to prevent unauthorized vehicle access.

11.2.5 Massachusetts Endangered Species Act

NEP will coordinate closely with NHESP pursuant to MESA (G.L. c. 131A) and WPA (G.L. c. 131, §40) to avoid impacts to listed species and their habitat, and to provide mitigation for any unavoidable impacts. Although impacts will be avoided and minimized to the maximum practicable extent without compromising the safety of Project construction and future maintenance personnel, there is some potential "take". A CMP will be provided, if required.

³⁴ NEP has researched whether each of the waterway crossings along the Project Route is likely to require an Order of Conditions, eliminating the need for a c. 91 license. For each crossing where NEP has determined that an OOC is required, there is some possibility that the local conservation commission could require construction plan revisions that would change the wetlands and waterways analysis. One possible scenario is this change could eliminate the need for an OOC, in which case NEP would submit a c. 91 license application. NEP has determined that each of the poles near the crossings must be in the proposed location for constructability purposes, making a scenario where the conservation commission insists on relocating poles outside of wetlands areas unlikely. If pole locations must be changed in a way that relieves the OOC requirement, however, NEP will determine at that time whether a c. 91 license application is necessary for the relevant crossing.

³⁵ NEP is evaluating the location of replacements structures along Depot Road in Westminster. The original easement CRT 87 (*Charles H. Dupee et ux*), granted rights to NEP that allow the structure relocation. In addition, the highway taking/relocation in 1985 reserved the rights of all electric transmission easements. The structure relocation is being proposed as an "in-kind" replacement. Should MassDOT deem it to be otherwise, a permanent access permit may be required. NEP will consult with MassDOT.

The NHESP analysis will not be complete until NEP files for MESA Review. As such, coordination will continue until the submittal of the MESA Project Review Checklist. NEP will work closely with NHESP to develop a mutually agreed upon protection plan for the state-listed species, if needed.

11.2.6 Massachusetts Historical Commission

Any projects that require funding, licenses, or permits from any state agency must be reviewed by MHC in compliance with G.L. c. 9, §26-27C. This law created the MHC, the office of the State Archaeologist, and the State Register of Historic Places, among other historic preservation programs. It provides for MHC review of state projects, State Archaeologist's Permits, the protection of archaeological sites on public land from unauthorized digging, and the protection of unmarked burials. The regulations that guide MHC review of state funded, licensed or permitted projects are published in Chapter 9, Section 26-27C (950 CMR 70-71). If the Project is found to have an adverse effect to a significant historic property or archaeological site, NEP will consult with MHC and other parties, as appropriate, to determine the feasible measures to avoid, minimize or mitigate the adverse effect.

11.2.7 Energy Facilities Siting Board

A Petition for Approval to Construct and Operate the Project will be filed with the EFSB (or "Siting Board") pursuant to Chapter 164, Section 69J of the General Laws. Under Chapter 164, Section 69G, a "facility" requiring approval by the EFSB includes:

- A new electric transmission line having a design rating of 115 kV or more which is 10miles long or more on an existing transmission corridor except reconductoring or rebuilding of transmission lines at the same voltage.
- An ancillary structure which is an integrated part of the operation of any transmission line.

This Project meets both requirements. The EFSB approval process includes filing the Petition followed by an extensive and lengthy adjudicatory process. The Siting Board has a statutory requirement to implement its policies in order "to provide a reliable energy supply for the Commonwealth with a minimum impact upon the environment at the lowest possible cost." (G.L. c. 164, §69H and 69J). Further, G.L. c. 164, §69J requires the Siting Board to review alternatives to planned projects, including "other site locations." A petitioner to the Siting Board must demonstrate that it has examined a reasonable range of practical siting alternatives, and that its "proposed facilities are sited at locations that minimize costs and environmental impacts while ensuring supply reliability".

A Petition for Approval to Construct is expected to be submitted to the EFSB in late 2022, which will initiate their review process. Concurrently with its Petition to the Siting Board, NEP intends to file Petitions with the DPU: (1) requesting a determination that the Project is necessary and will serve the public convenience and be consistent with the public interest in accordance with G.L. c. 164, § 72 ("Section 72"); and (2) requesting exemptions from the Zoning Ordinances of the Project communities pursuant to G.L. c. 40A, § 3.

Some sections of this Expanded ENF are similar to what will be submitted to the Siting Board (e.g., Project Information, Alternatives Assessment and the Project route impacts). As required by the EFSB, the Petition will also document the load forecast methodology and the complex contingency analysis using computer modeling. These pieces of information will comprehensively establish the need for the Project as stipulated by applicable EFSB requirements.

NEP is confident that the Project represents the optimal solution because it meets the reliability needs; comparatively offers the best solution with the least amount of adverse impacts, and provides a cost-effective solution.

11.3 FEDERAL REGULATIONS

11.3.1 Section 404 of the Clean Water Act

As noted in the discussion of state permits, the wetlands along the ROW are subject to the jurisdiction of Sections 401 and 404 of the federal CWA. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The Section 401 Water Quality Certification, as administered by MassDEP, was discussed previously. The Section 404 process is administered by the USACE.

The USACE (Federal Register 1982) and the EPA (Federal Register 1980) jointly define wetlands as “areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” Section 404 of the CWA establishes permit programs to regulate the discharge of dredged or fill material into waters of the United States, as well as discharges of dredged or fill material into wetlands adjacent to nominal waters (33 CFR 328). The Project qualifies for Pre-Construction Notification (“PCN”) in accordance with the USACE Massachusetts General Permits for activities within federal wetlands as defined by Section 404 of the CWA, primarily due to the temporary BVW impacts associated with construction mats, which are considered “fill”. NEP anticipates submitting a PCN and continuing to consult with USACE through the permitting process.

The Project will meet the USACE’s requirement that areas of permanent fill be mitigated. Mitigation will be determined using criteria defined in the 2016 New England District Compensatory Mitigation Guidance, and through consultation with the USACE New England District.

Permanent impacts to VPs have been avoided and no temporary work envelopes will be placed within VPs pools during spring and/or fall breeding seasons. Use of construction BMPs will be employed to avoid and minimize indirect impacts to the VPs in the vicinity of the Project. Construction-related details will be provided in permit applications and are also addressed in *Section 10: General Transmission Line Construction Procedures*.

11.3.2 Environmental Protection Agency

The NPDES program in Massachusetts requires that any construction project disturbing one (1) or more acres of land and will discharge stormwater (or dewatering discharges) from a site into municipal separate stormwater system or into water of the U.S., must first seek coverage under, and comply with, the EPA’s Stormwater General Permit. The NPDES CGP requires filing an NOI that provides information on the site and identifies the site’s general operator; development of a SWPPP that includes appropriate BMPs to minimize pollutant discharges; and submitting a Notice of Termination (“NOT”) when the site has achieved final stabilization or stormwater is no longer being discharged.

The Project will comply with the requirements of the NPDES CGP. As a component to this compliance, a site-specific SWPPP will be prepared and implemented throughout the Project’s construction and restoration phases. Implementation of this plan will include extensive use of erosion and sediment control measures designed to minimize site disturbance and prevent opportunities for sedimentation to occur offsite or toward wetland resource areas. The SWPPP will be included in each NOI, and it is anticipated that the requirements of the SWPPP will be included in the OOC issued by each community within the Project area.

11.3.3 U.S. Fish and Wildlife Service

Under the Endangered Species Act (“ESA”), any action requiring one (1) or more federal permits or licenses must also consult with the US Fish and Wildlife Service (“USFWS”) to ensure that proposed actions do not

jeopardize listed species or destroy or adversely modify critical habitat. Accordingly, the USFWS Endangered Species Consultation Procedure available on their website was followed. As a result, it was determined while the Project area is mapped for the Federally Listed northern long-eared bats (*Myotis septentrionalis*), but that there are no known hibernacula within 0.25 miles of the Project area and no known maternity roost trees within a 150-ft buffer. Therefore, currently, no additional consultation is required. However, note that a status review of the northern long-eared bat has been completed, and the final recommendations regarding its status will be published, reviewed, and accepted in 2022. Additional consultation may be required, pending the outcome of this process.

The Endangered Species Consultation determined that one (1) candidate insect, Monarch Butterfly (*Danaus plexippus*), one (1) endangered plant, and one (1) threatened plant may be present within the Project area along with the northern long-eared bat. In 2020, the USFWS concluded that listing the monarch under the ESA is warranted; but, precluded by higher priority listing actions. Based on the USFWS' priorities and workload, the USFWS intends to propose listing the monarch in Fiscal Year 2024, if listing is still warranted at that time. In the meantime, the Monarch is designated as a candidate under the ESA. Candidate species are not protected under the ESA, but the USFWS reviews their status annually, and could decide to initiate the listing process sooner than 2024.

Review is ongoing to determine permitting and/or avoidance measures for the two (2) plants identified.

11.3.4 Section 106 of the National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 ("NHPA" or "Section 106") requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation ("ACHP") a reasonable opportunity to comment (33 CFR 325 Appendix C and 36 CFR Part 800 and 33 CFR 325, Appendix C). Pursuant to 36 CFR 800.16, an undertaking consists of "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, those carried out with federal financial assistance, those requiring a federal permit, license or approval and those subject to State or local regulation administered pursuant to a delegation or approval by a federal agency."

For the Project, the undertaking is the Section 404 Permit, and the responsible federal agency is the USACE. "Section 106 review" follows a specific process, which is guided by federal regulations (36 CFR 800 and 33 CFR 325, Appendix C). These regulations have created a series of steps by which federal agencies identify and evaluate historic properties that may be affected by their undertakings, assess adverse effects to those properties, and take prudent and feasible measures to avoid, minimize, or mitigate those effects.

12 MITIGATION OVERVIEW AND SECTION 61 FINDINGS

12.1 INTRODUCTION

Mitigation is a means of offsetting potential adverse effects of human activity on the environment. The development of mitigation measures has become an integral part of the regulatory process and of conservation planning efforts. Most state legislation requiring mitigation measures does not prescribe the specific mitigation activity that must take place, and mitigation can take many forms, including the following:

- Avoiding an impact by not taking an action or redirecting/relocating an action;
- Minimizing an impact by limiting the degree of action taken;
- Restoring, rehabilitating or repairing the affected environment;
- Preservation and maintenance activities to reduce or eliminate the impacts over time; and
- Providing replacement or substitute resources or environments.

NEP is incorporating elements of these approaches in its overall mitigation plan to comprehensively address potential impacts associated with the proposed maintenance and improvements to the A1/B2 Lines. This section presents a comprehensive overview of the mitigation measures discussed in *Sections 3 through 8*, respectively, for land use, wetlands and wildlife, rare species, historic/archeological resources, EJ communities and climate change adaptation and resiliency.

MEPA requires state agencies to make findings on environmental damage and mitigation measures before issuing a state permit for a project requiring an EIR (301 CMR 11.07 (so-called Section 61 Findings)). The MEPA regulations at 301 CMR 11.07(6)(k) require that the EIR contain the proposed Section 61 Findings. In accordance with this requirement, NEP's proposed Section 61 Findings for the Project are also presented herein.

12.2 MITIGATION OVERVIEW

As noted throughout this document, NEP has incorporated an approach that avoids and minimizes impacts wherever practicable. For example, the proposed design utilizes existing utility corridors and, whenever feasible, locates replacement structures close to existing structures; relocates replacement structures such that they span wetland resource areas; clears vegetation only where necessary for safe operation; and utilizes upland access routes for construction purposes.

NEP has also evaluated alternative construction methodologies designed to reduce impacts to environmentally sensitive areas. Specifically, NEP and their consultant team assessed the constructability of the Project to identify ways to minimize impacts from installation of access roads and construction work envelopes. Work envelopes have been designed to safely facilitate construction on energized lines ("live line" construction). Live line construction is required due to outage constraints along the Lines. Within RFA, work pads will be loamed and seeded, and in the uplands, work envelopes will remain to ensure safe and stable work areas for future maintenance and emergency responses. Access roads have been designed to limit grading where necessary and will incorporate stormwater BMPs for stability and avoidance of impacts to adjacent water resources. Consultation with NHESP is ongoing.

Mitigation measures proposed for construction include appropriate BMPs such as erosion control barriers, use of construction mats, minimizing areas of disturbance, and restoration when necessary.

In terms of mitigation during construction, NEP has established BMPs that will be followed by all NEP employees and contractors for accessing sites and performing construction activities on transmission ROWs. These procedures, outlined in *Section 10.0 and Appendix C*, ensure that the Project will be

completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives.

Project impacts are largely associated with work within wetland resource areas and include temporary and permanent impacts that may be mitigated by implementing a variety of measures that comprise a comprehensive mitigation package. Such measures may include restoration of temporarily impacted areas and replication to compensate for permanent impacts. Mitigation will be determined using criteria defined in the 2016 New England District Compensatory Mitigation Guidance and through consultation with the USACE New England District, MassDEP, and local Conservation Commissions.

NEP is committed to developing a mitigation package that addresses potential Project impacts to the greatest practicable extent. NEP anticipates that the final mitigation package will be developed during the federal, state and local permitting processes outlined in Section 1 of this Project Narrative, and that the mitigation package will fully address the concerns and required permit conditions. Proposed mitigation measures will be reviewed by the Conservation Commission in each town, MassDEP, NHESP, MHC, and the USACE, and ultimately will be incorporated into the permits and OOCs issued for the Project.

12.3 SECTION 61 FINDINGS

The remainder of this section presents the proposed Section 61 Findings in compliance with 301 CMR 11.07(6)(k). These proposed findings have been developed considering consultations with various state agencies. While NEP will continue to consult with certain agencies concerning mitigation, this Expanded ENF contains the most up-to-date information on the Project's mitigation measures, including those to which NEP has committed to and those under discussions with agencies. Each Section 61 Finding is essentially a stand-alone document, so it does not incorporate previously defined acronyms.

Proposed Section 61 Findings for Massachusetts Department of Environmental Protection (Mass DEP)

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company (“NEP”)

EOEA Number: To Be Determined

Agency Actions: Massachusetts Department of Environmental Protection Section 401 Water Quality Certification

Intent of These Section 61 Findings: MEPA regulations 301 CMR 11.12(5) stipulate that in “accordance with G.L. c.30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment.” The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the Section 401 Water Quality Certification sought from the Massachusetts Department of Environmental Protection.

Project Description: The Project includes complete refurbishment of 54 miles of 69 kV Transmission Line assets including structures replacements and installations, access improvements or re-establishment and construction of new access, and vegetation cutting. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Replacement of 711 structures
- Installation of approximately 305 concrete caisson foundations
- Installation of six (6) new vertical jumper switch structures
- Reconductoring of both circuits with 795 Aluminum-conductor steel-supported conductor (ACSS), installation of two (2) OPGW
- Construction of new and/or re-establishment of access roads
- Relocation of ~5.2 miles of centerline, approximately 41.5-ft north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.
- ROW vegetation cutting to obtain a minimum horizontal clearance of 30-ft to the edge of ROW/easement under all horizontal clearance weather conditions. On average, the existing ROW vegetation removal is 85-ft. The ROW will be cleared to 100-ft on the mainline and Crystal Lake Tap Line and 125-ft Athol Tap Line to obtain the necessary horizontal clearance requirements.
- Some tree removal may be required to accommodate Project access.

In addition, the existing shield wire will be replaced with OPGW to provide high speed communications between substations. .

This Project requires an Individual Section 401 Water Quality Certification, primarily due to the anticipated “Take” determination from NHESP under MESA. The Project also requires a Water Quality Variance due to the placement of temporary construction matting within wetlands that are located within 400-ft of the OHWM of a Class A Surface Water. Applications will be filed with MassDEP for review under 314 CMR 9.00. MassDEP evaluation criteria for applications are the incorporation of all appropriate and practicable measures for avoiding and minimizing impacts to wetland resource areas. The Project’s design avoids, minimizes, and mitigates adverse impacts, as described in this section and *Section 11*.

MEPA History: Pursuant to G.L. c. 30, §61- §62A-H, of the Massachusetts Environmental Policy Act (“MEPA”) and its implementing regulations at 301 CMR 11.00, the Proponent (“NEP”) has prepared and submitted this Expanded (“ENF”) to the MEPA office. The Expanded ENF is the first MEPA filing associated with this Project. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (301 CMR 11.03(3)(a)(1)(a)).
- EIR for Land because there is expected to alter 50 or more acres of land (301 CMR 11.03(1)(1)).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (301 CMR 11.03(3)(a)(1)(b)).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).

Additionally, the proposed Project requires state permits from the 401 Water Quality Certification, Natural Heritage and Endangered Species, Department of Conservation and Recreation, Massachusetts Department of Waterways, Energy Facilities Siting Board, Department of Public Utilities, Massachusetts Department of Environmental Protection and Massachusetts Department of Transportation.

Project Impacts: Impacts relative to the Section 401 Water Quality Certificate include the permanent fill of approximately 1,896 sf of BVW due to structure foundations, approximately, 667,928 sf (~15 acres) of forested wetland conversion due to tree removals, and approximately 51 acres (2,200,651 sf) of BVW temporarily impacted by construction mats, and the anticipated take for work within rare species habitat by NHESP.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on transmission ROWs. These procedures ensure that this Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and a constructability review along the Project Route to determine access routes and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within wetlands and other sensitive resources (e.g., cultural resources) to the greatest extent practicable. Accordingly, the below-listed commitments are to be carried out by NEP to ensure that all proposed wetlands and waterways mitigation strategies will be implemented as the Project proceeds.

Table 26: Wetlands & Waterways Mitigation Strategies for the Project

Wetland Resource Area	Impact	Mitigation Measures	Responsible Party/ Implementation
BVW	Temporary alterations during construction; permanent fill for structure installation	<p>Use construction mats for access through wetlands, across streams and other sensitive areas to minimize compression of soils, rutting, and disturbance of vegetation.</p> <p>Provide mitigation to be determined in consultation with agencies to offset any permanent wetland impacts.</p> <p>Habitat enhancement in wetland resource areas affected by tree removal to minimize impacts from change in wetland function.</p> <p>Implement SWPPP.</p>	<p>Contractor/Construction</p> <p>Contractor/Construction/ Potential post-construction monitoring</p> <p>Contractor/Construction</p> <p>Contractor/Construction</p>
BLSF	Temporary alteration and permanent fill of floodplain for access, work envelopes and structures	<p>Restore areas temporarily impacted, as appropriate. Provide mitigation for permanent flood storage loss due to structure installation and potential grading required for access and construction work envelope.</p> <p>Employ temporary erosion controls (e.g., silt fence, hay/straw bales, filter socks, mulching, temporary and/or permanent reseeding) and sedimentation controls, as appropriate.</p>	<p>Contractor/ NEP Construction/Potential post-construction monitoring</p> <p>Contractor/ Construction</p>
RA	Temporary impact to Riverfront Area for access and work envelopes.	<p>Restore areas temporarily impacted.</p> <p>Employ temporary erosion controls (e.g., silt fence, hay/straw bales, filter socks, mulching, temporary and/or permanent reseeding) and sedimentation controls, as appropriate.</p>	<p>Contractor/ Construction</p> <p>Contractor/ Construction</p>
Bank	Temporary impact to bank due to access and work envelopes. In most cases, construction mat crossing will span the Bank of rivers and stream; however, the potential for alteration has been	<p>Use construction mats to minimize compression of soils, rutting, and disturbance of vegetation.</p>	<p>Contractor/ Construction</p>

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	accounted for in the Project impact calculations.		
LUW	Temporary impact to LUW for access, work envelopes and pull pads. Permanent impact for two (2) concrete caissons.	Use construction mats to minimize compression of soils, rutting, and disturbance of vegetation.	Contractor/ Construction
Waterways	Potential impacts to non-tidal waterways from overhead wires.	Overhead crossings designed to avoid conflicts and allow for unimpeded access by foreseeable watercraft.	NEP/ Planning

Proposed Section 61 Findings Massachusetts Department of Transportation (MassDOT)

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company (“NEP”)

EOEA Number: To Be Determined

Agency Action: Massachusetts Department of Transportation Permit to Access State Highway and Permanent Access Permit within the Highway Layout

Intent of These Section 61 Findings: MEPA regulations 301 CMR 11.12(5) stipulate that in “accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment.” The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the State Highway Access Permit sought from the Massachusetts Department of Transportation (“MassDOT”).

Project Description: The Project includes complete refurbishment of 54 miles of 69 kV Transmission Line assets including structures replacements and installations, access improvements or re-establishment and construction of new access, and vegetation cutting. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Replacement of 711 structures
- Installation of approximately 305 concrete caisson foundations
- Installation of six (6) new vertical jumper switch structures
- Reconductoring of both circuits with 795 Aluminum-conductor steel-supported conductor (“ACSS”), installation of two (2) OPGW
- Construction of new and/or re-establishment of access roads
- Relocation of ~5.2 miles of centerline, approximately 41.5-ft north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.
- ROW vegetation cutting to obtain a minimum horizontal clearance of 30-ft to the edge of ROW/easement under all horizontal clearance weather conditions. On average, the existing ROW vegetation cutting is 85-ft. The ROW will be cleared to 100-ft on the mainline and Crystal Lake Tap Line and 125-ft Athol Tap Line to obtain the necessary horizontal clearance requirements.
- Tree removals to accommodate construction access.

In addition, the existing shield wire will be replaced with OPGW to provide high speed communications between substations.

The Project includes installation of structures and access routes within the highway layout, as well as temporary access to pull conductor across the highway subject to 700 CMR 13.00.

MEPA History: Pursuant to G.L. c. 30 §61- §62A-H, of the Massachusetts Environmental Policy Act (“MEPA”) and its implementing regulations at 301 CMR 11.00, the Proponent (“NEP”) has prepared and submitted this Expanded ENF to the MEPA office. The Expanded ENF is the first MEPA filing associated with this Project. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (301 CMR 11.03(3)(a)(1)(a)).
- EIR for Land because there is expected to alter 50 or more acres of land (301 CMR 11.03(1)(1)).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (301 CMR 11.03(3)(a)(1)(b)).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).

Additionally, the proposed Project requires state permits from the 401 Water Quality Certification, Natural Heritage and Endangered Species, Department of Conservation and Recreation, Massachusetts Department of Waterways, Energy Facilities Siting Board, Department of Public Utilities, Massachusetts Department of Environmental Protection and Massachusetts Department of Transportation.

Project Impacts: The proposed Project’s impacts relative to MassDOT are associated with the installation of new overhead wires across state highways by a non-municipal utility. Guard structures, situated on the site of the state roadways in the NEP ROW, may be utilized to ensure safe installation, locations of such structures are still under review. The installation could temporarily affect traffic flow of the roadway but does not involve permanent physical modifications to the roadway. In addition, an access road from the highway to the ROW is proposed as is the installation of several structures within the highway layout.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on NEP transmission ROWs. These procedures ensure that this Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives.

MassDOT’s Districts 2 and 3 will be contacted to discuss specific design information and anticipated Project activities within highway jurisdiction. With MassDOT input, a Traffic Management Plan will be developed and submitted for review and approval prior to the start of construction. Enforceable commitments in the Traffic Management Plan will be carried out by NEP to ensure that all proposed traffic mitigation strategies will be implemented as the Project proceeds. Such strategies may include, as appropriate, traffic management procedures; construction time restrictions; signage; installation of track pads to minimize soil in roadways; and/or restoration of vegetation along soft shoulders after construction. All work will occur in accordance with NEP Guidance Document for ROW Access, Maintenance and Construction Best Management Practices.

Findings: After the draft findings herein have been reviewed by Massachusetts Department of Transportation, and revised by the Proponent, as appropriate, the Massachusetts Department of Transportation will make a finding that the foregoing information adequately describes the traffic impacts

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associated with the proposed Project, and that with the implementation of the mitigation measures described above, all feasible means will have been taken to avoid or minimize adverse environmental impacts subject to Massachusetts Department of Transportation's authority. Appropriate conditions consistent with this Section 61 Finding are included in the State Permit to Access State Highway, and Permanent Access Permit within the Highway Layout issued by Massachusetts Department of Transportation to describe more fully and ensure implementation of said measures.

Proposed Section 61 Findings for Natural Heritage and Endangered Species (NHESP)

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company (“NEP”)

EOEA Number: To Be Determined

Agency Action: Conservation and Management Permit from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife under 321 CMR 10.23.

Intent of These Section 61 Findings: MEPA regulations 301 CMR 11.12(5) stipulate that in “accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment.” The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the Conservation and Management Permit (“CMP”) sought from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife under 321 CMR 10.23.

Project Description: The Project includes complete refurbishment of 54 miles of 69 kV Transmission Line assets including structures replacements and installations, access improvements or re-establishment and construction of new access, and vegetation cutting. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Replacement of 711 structures
- Installation of approximately 305 concrete caisson foundations
- Installation of six (6) new vertical jumper switch structures
- Reconductoring of both circuits with 795 Aluminum-conductor steel-supported conductor (ACSS), installation of two (2) OPGW
- Construction of new and/or re-establishment of access roads
- Relocation of ~5.2 miles of centerline, approximately 41.5-ft north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.
- ROW vegetation cutting to obtain a minimum horizontal clearance of 30-ft to the edge of ROW/easement under all horizontal clearance weather conditions. On average, the existing ROW vegetation cutting is 85-ft. The ROW will be cleared to 100-ft on the mainline and Crystal Lake Tap Line and 125-ft Athol Tap Line to obtain the necessary horizontal clearance requirements.
- Tree removals to accommodate construction access.

In addition, the existing shield wire will be replaced by OPGW to provide high speed communications between substations. NEP is the process of consulting with NHESP pursuant to MESA (G.L. c. 131A) and WPA (G.L. c. 131, §40) to avoid impacts to listed species and their habitat, and to provide mitigation for any unavoidable impacts. Although impacts will be avoided and minimized to the maximum practicable extent without compromising the safety of Project construction and future maintenance personnel, there is some potential “take”. A CMP will be provided, if required.

MEPA History: Pursuant to G.L. c. 30, §61- §62A-H, of the Massachusetts Environmental Policy Act (“MEPA”) and its implementing regulations at 301 CMR 11.00, the Proponent (“NEP”) has prepared and submitted this Expanded ENF to MEPA. The Expanded ENF is the first MEPA filing associated with this Project. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (301 CMR 11.03(3)(a)(1)(a)).
- EIR for Land because there is expected to alter 50 or more acres of land (301 CMR 11.03(1)(1)).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (301 CMR 11.03(3)(a)(1)(b)).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).

Additionally, the proposed Project requires state permits from 401 Water Quality Certification, Natural Heritage and Endangered Species, Department of Conservation and Recreation, Massachusetts Department of Waterways, Energy Facilities Siting Board, Department of Public Utilities, Massachusetts Department of Environmental Protection and Massachusetts Department of Transportation.

Project Impacts: Impacts relative to the CMP include a potential “take” due to activities proposed within protected species habitat.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on transmission ROWs. These procedures ensure that this Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and a constructability review along the Project Route to determine access routes, clearing techniques, and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within sensitive resources to the greatest extent practicable.

NEP is working closely with NHESP and consultation is ongoing. The Project will implement the necessary actions to avoid, minimize, and mitigate Project-related impacts to comply with the MESA permit issued for the Project.

A detailed mitigation plan will be prepared in conjunction with NHESP during the MESA Review in 2022.

Findings: After the draft findings herein have been reviewed by Massachusetts Division of Fisheries and Wildlife, NHESP, and revised by the Proponent, as appropriate, the NHESP will make a finding that the foregoing information adequately describes the environmental impacts associated with the proposed

Project, and that with the implementation of the mitigation measures described above, all feasible means will have been taken to avoid or minimize adverse environmental impacts subject to NHESP authority.

Proposed Section 61 Findings for Department of Conservation and Recreation (DCR)

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company (“NEP”)

EOEA Number: To Be Determined

Agency Action: Department of Conservation and Recreation Construction Access Permits

Intent of These Section 61 Findings: MEPA regulations 301 CMR 11.12(5) stipulate that in “accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment.” The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the Construction Access Permit sought from the Massachusetts DCR.

Project Description: The Project includes complete refurbishment of 54 miles of 69 kV Transmission Line assets including structures replacements and installations, access improvements or re-establishment and construction of new access, and vegetation cutting. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Replacement of 711 structures
- Installation of approximately 305 concrete caisson foundations
- Installation of six (6) new vertical jumper switch structures
- Reconductoring of both circuits with 795 Aluminum-conductor steel-supported conductor (ACSS), installation of two (2) OPGW
- Construction of new and/or re-establishment of access roads
- Relocation of ~5.2 miles of centerline, approximately 41.5-ft north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.
- ROW vegetation cutting to obtain a minimum horizontal clearance of 30-ft to the edge of ROW/easement under all horizontal clearance weather conditions. On average, the existing ROW vegetation cutting is 85-ft. The ROW will be cleared to 100-ft on the mainline and Crystal Lake Tap Line and 125-ft Athol Tap Line to obtain the necessary horizontal clearance requirements.
- Tree removals to accommodate construction access.

In addition, the existing shield wire will be replaced with OPGW to provide high speed communications between substations. The Project includes on and off-ROW tree removal and construction activities on

DCR properties of the Commonwealth under the care, custody, and control of the DCR under 302 CMR 11.00.

MEPA History: Pursuant to G.L. c. 30, §61- §62A-H, of the Massachusetts Environmental Policy Act (“MEPA”) and its implementing regulations at 301 CMR 11.00, the Proponent (“NEP”) has prepared and submitted this Expanded ENF to MEPA. The Expanded ENF is the first MEPA filing associated with this Project. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (301 CMR 11.03(3)(a)(1)(a)).
- EIR for Land because there is expected to alter 50 or more acres of land (301 CMR 11.03(1)(1)).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (301 CMR 11.03(3)(a)(1)(b)).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).

Additionally, the proposed Project requires state permits from the 401 Water Quality Certification, Natural Heritage and Endangered Species, Department of Conservation and Recreation, Massachusetts Department of Waterways, Energy Facilities Siting Board, Department of Public Utilities, Massachusetts Department of Environmental Protection and Massachusetts Department of Transportation.

Project Impacts: Impacts relative to the DCR Construction Access Permits include tree removals, access road construction and structure replacement containing concrete caissons at 14 structures within DCR properties.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on transmission ROWs. These procedures ensure that this Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and a constructability review along the Project Route to determine access routes, clearing techniques, and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within sensitive resources to the greatest extent practicable.

At this time, proposed mitigation may include, but is not limited to, the following:

- Any and all work will be conducted according to the Construction Access Permit terms and conditions, to the satisfaction of the Department.
- All work will be performed in accordance with applicable statutes, regulations, codes or standards.

A detailed mitigation plan will be prepared in conjunction with the anticipated filing of DCR Permits in 2023. Coordination with DCR is ongoing.

Findings: After the draft findings herein have been reviewed by DCR, and revised by the Proponent, as appropriate, the DCR will make a finding that the foregoing information adequately describes the environmental impacts associated with the proposed Project, and that with the implementation of the mitigation measures described above, all feasible means will have been taken to avoid or minimize adverse environmental impacts subject to DCR authority.

Proposed Section 61 Findings Executive Office of Energy and Environmental Affairs Environmental Justice
DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company (“NEP”)

EOEA Number: To Be Determined

Agency Action: Executive Office of Energy and Environmental Affairs (“EOEEA”) - Environmental Justice

Intent of These Section 61 Findings: MEPA regulations 301 CMR 11.12(5) stipulate that in “accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment.” The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the MEPA Interim Protocol for Analysis of Environmental Justice (EJ) Impacts, which implements requirements related to the content of Environmental Impact Reports (EIRs) as set forth in Section 58 of the Act.

Project Description: Project Description: The Project includes complete refurbishment of 54 miles of 69 kV Transmission Line assets including structures replacements and installations, access improvements or re-establishment and construction of new access, and vegetation cutting. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Replacement of 711 structures
- Installation of approximately 305 concrete caisson foundations
- Installation of six (6) new vertical jumper switch structures
- Reconductoring of both circuits with 795 Aluminum-conductor steel-supported conductor (“ACSS”), installation of two (2) OPGW
- Construction of new and/or re-establishment of access roads
- Relocation of ~5.2 miles of centerline, approximately 41.5-ft north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.
- ROW vegetation cutting to obtain a minimum horizontal clearance of 30-ft to the edge of ROW/easement under all horizontal clearance weather conditions. On average, the existing ROW vegetation cutting is 85-ft. The ROW will be cleared to 100-ft on the mainline and Crystal Lake Tap Line and 125-ft Athol Tap Line to obtain the necessary horizontal clearance requirements.
- Tree removals to accommodate construction access.

In addition, the existing shield wire will be replaced with OPGW to provide high speed communications between substations.

MEPA History: Pursuant to G.L. c. 30, §61- §62A-H, of the Massachusetts Environmental Policy Act (“MEPA”) and its implementing regulations at 301 CMR 11.00, the Proponent (“NEP”) has prepared and submitted this Expanded ENF to MEPA. The Expanded ENF is the first MEPA filing associated with this Project. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (301 CMR 11.03(3)(a)(1)(a)).
- EIR for Land because there is expected to alter 50 or more acres of land (301 CMR 11.03(1)(1)).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (301 CMR 11.03(3)(a)(1)(b)).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).

Additionally, the proposed Project requires state permits from the 401 Water Quality Certification, Natural Heritage and Endangered Species, Department of Conservation and Recreation, Massachusetts Department of Waterways, Energy Facilities Siting Board, Department of Public Utilities, Massachusetts Department of Environmental Protection and Massachusetts Department of Transportation.

Project Impacts: Impacts relative to the EOEEA EJ Populations include approximately 24 acres of tree removal within the EJ Populations, 29 acres of cut/fill associated with establishment of access roads, work envelopes and pull pads, and 322 lf of Standard Road Type 1 & 2, and 19,054 lf of Designed Road Type 3-5. In total, 10% of Project impacts are located within the EJ Populations, which represents 10% of the Project ROW, whereas 90% of Project impacts are within non-EJ Populations, which represents 90% of the Project Right-of-Way (ROW). Therefore, NEP anticipates that the Project will not have unfair or inequitable impacts on the EJ Populations within the designated geographic area.

Project Mitigation: The Project will occur within the existing ROW, thereby minimizing adverse environmental impacts to the nature of the Project, outage constraints in the region, and NEP’s efforts to reduce impacts to the natural and human environment, Project activities will be sequenced in both the mainline and tap lines. No long-term impacts on soil, bedrock, vegetation, surface water, groundwater, wetland resources or air quality will occur. Any potential sedimentation impacts, and other short-term construction impacts to wetlands and surface waters, will be mitigated through the use of soil erosion and sediment control BMPs and temporary construction mats to protect wetland soils, vegetation root stock, and streams. As part of the Project, an Environmental Monitor will be part of the Project team to ensure compliance with all regulatory programs and permit conditions, and to oversee the proper installation and maintenance of the soil erosion and sediment control BMPs.

At this time, proposed mitigation includes, but is not limited to, the following:

Air Quality

Construction-period activities, such as grading, roadbuilding, vehicle travel, and other earth-disturbing work may result in a temporary increase in airborne dust. Impacts to air quality will be minimized by managing the control of dust movement with practices such as spreading wood mulch or straw and using water trucks to spray dried soil to keep it moist. The potential for dust generation is only anticipated during the construction period. Post construction, soil will be stabilized and re-vegetated.

In addition, diesel-powered equipment is required to use ultra-low sulfur diesel fuel. Any diesel-powered non-road construction equipment rated 50-horsepower or more that will be used on the Project for 30 days or more will be required to install emission control devices. The impacts from these emissions will be minimal and are not anticipated to cause impacts to public health. Additionally, idling times are limited to five (5) minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts. Vehicle idling is to be minimized during construction activities and be in compliance with the Massachusetts Anti-idling Law, G.L. c. 90 § 16A, c. 111 §§ 142A – 142M, and 310 CMR 7.11.

Water Quality

The project will incorporate protective and preventative measures to minimize and avoid impacts to water quality. The ROWs cross many wetland areas, streams and rivers. To protect water quality and these sensitive areas, temporary roads will be constructed using construction mats. Construction mats are comprised of wooden beams, bolted together, and are typically 4-ft wide by 16-ft long. They are laid temporarily on top of the ground and vegetation. These mats allow heavy machines and vehicles to cross sensitive areas without damaging the soil or roots of vegetation and are also placed in a manner that do not affect the flow of water in streams. These mats will be removed when construction is completed, and the wetlands will be restored. In addition, BMPs, such as the use of straw wattles, silt fencing, stormwater management features, and other control measures will be used to prevent soil and other material from being transported into wetlands and streams. Using these BMPs, any impacts to water quality will be negligible and temporary and are not anticipated to cause impacts to public health.

Land Protection and Open Space

Project activities will be limited to the existing ROW. Access to Protected Land and Open Space within EJ Populations will not be impacted.

Noise

Noise impacts associated with construction-period activities are temporary in nature and expected to be minimal. Where construction will occur adjacent to residences, NEP will notify landowners prior to the commencement of work. Noise-generating activities will be conducted in accordance with any local and state requirements and are not anticipated to cause impacts to public health.

Traffic

Impacts to traffic during the construction of the Project will be minor and intermittent. The work areas will be accessed primarily from NEP-owned access routes or minor town roadways. NEP will obtain the necessary permits from Massachusetts Department of Transportation for access. Once on-site, vehicle traffic will be limited to within or in proximity to the ROW. Since the ROW is an un-manned facility, there will be no permanent impacts to traffic patterns or use of existing roadways and no impacts to public health are anticipated from traffic.

Findings:

After the draft findings herein have been reviewed by the EOEEA - EJ Program, and revised by the Proponent, as appropriate, the EOEEA - EJ Program will make a finding that the foregoing information adequately describes the environmental impacts to the EJ Populations associated with the proposed Project, and that with the implementation of the mitigation measures described above, all feasible means will have been taken to avoid or minimize adverse environmental impacts subject to EOEEA's EJ authority.

Proposed Section 61 Findings Climate Protocol
DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company (“NEP”)

EOEA Number: To Be Determined

Agency Action: Executive Office of Energy and Environmental Affairs (“EOEEA”) - Climate Change

Intent of These Section 61 Findings: MEPA regulations 301 CMR 11.12(5) stipulate that in “accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment.” The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the Massachusetts Environmental Policy Act (“MEPA”) Interim Protocol on Climate Change Adaptation and Resiliency (“Interim Protocol”) which complies with Executive Order 569.

Project Description: Project Description: The Project includes complete refurbishment of 54 miles of 69 kV Transmission Line assets including structures replacements and installations, access improvements or re-establishment and construction of new access, and vegetation cutting. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Replacement of 711 structures
- Installation of approximately 305 concrete caisson foundations
- Installation of six (6) new vertical jumper switch structures
- Reconductoring of both circuits with 795 Aluminum-conductor steel-supported conductor (“ACSS”), installation of two (2) OPGW
- Construction of new and/or re-establishment of access roads
- Relocation of ~5.2 miles of centerline, approximately 41.5-ft north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.
- ROW vegetation cutting to obtain a minimum horizontal clearance of 30-ft to the edge of ROW/easement under all horizontal clearance weather conditions. On average, the existing ROW vegetation cutting is 85-ft. The ROW will be cleared to 100-ft on the mainline and Crystal Lake Tap Line and 125-ft Athol Tap Line to obtain the necessary horizontal clearance requirements.
- Tree removals to accommodate construction access.

In addition, the existing shield wire will be replaced with OPGW to provide high speed communications between substations.

MEPA History: Pursuant to G.L. c. 30, §61- §62A-H, of the Massachusetts Environmental Policy Act (“MEPA”) and its implementing regulations at 301 CMR 11.00, the Proponent (“NEP”) has prepared and submitted this Expanded ENF to MEPA. The Expanded ENF is the first MEPA filing associated with this Project. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (301 CMR 11.03(3)(a)(1)(a)).
- EIR for Land because there is expected to alter 50 or more acres of land (301 CMR 11.03(1)(1)).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (301 CMR 11.03(3)(a)(1)(b)).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).

Additionally, the proposed Project requires state permits from the 401 Water Quality Certification, Natural Heritage and Endangered Species, Department of Conservation and Recreation, Massachusetts Department of Waterways, Energy Facilities Siting Board, Department of Public Utilities, Massachusetts Department of Environmental Protection and Massachusetts Department of Transportation.

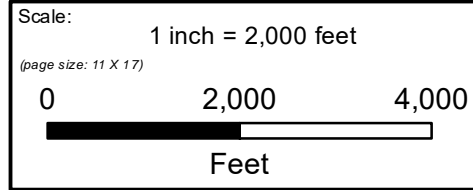
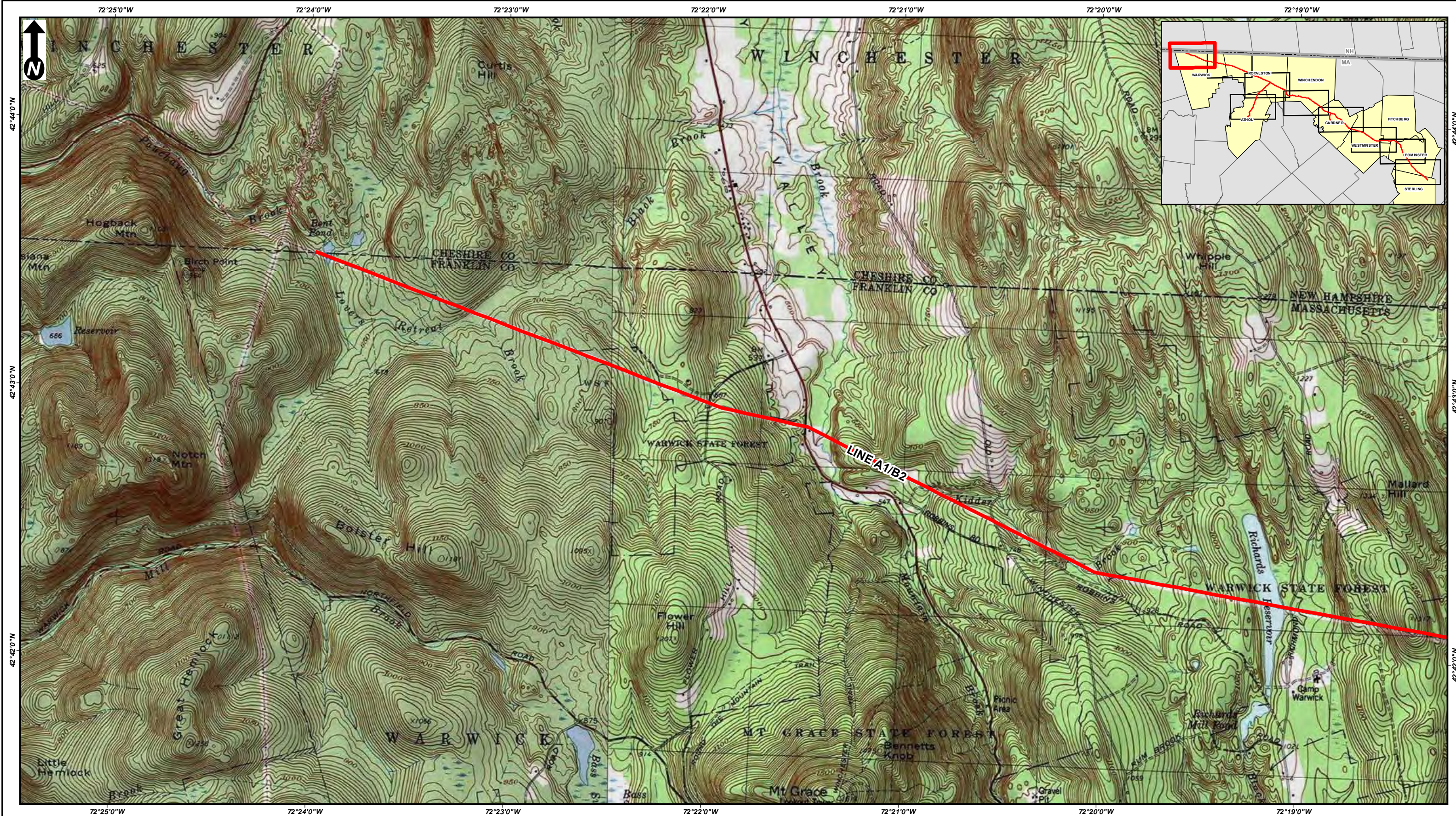
Project Impacts: Impacts relative to the Massachusetts Department of Energy Resources Climate Change include Project asset impacts of high exposure to Extreme Precipitation - Urban Flooding, Extreme Precipitation - Riverine Flooding and Extreme Heat.

Project Mitigation: The Project has incorporated measures that seek to reduce potential vulnerability to anticipated climate risks and improve resiliency for future climate conditions. The EOEEA Climate Change and Adaptation Report (Report) documents that with increasing temperatures as a result of climate change, electricity demand in the Commonwealth could increase by 40 percent in 2030. The Massachusetts State Hazard Mitigation & Climate Adaptation Plan states in its risk assessment, that, “in addition to increasing demand for heating and cooling, periods of both hot and cold weather can stress energy infrastructure...Electricity consumption during summer may reach three times the average consumption rate of the period between 1960 and 2000; more than 25 percent of this consumption may be attributable to climate change.”³⁶ The Report identifies that without reliable energy service, the basic needs of residents, visitors, businesses, and governments cannot be met. The Project, which is designed to improve reliable energy service within the region, serves this overall purpose.

NEP has taken steps to promote climate change adaptation and resiliency in the design of the Project and continues to consider climate change and long-term infrastructure resiliency an important goal in its long-term infrastructure planning. The Project will result in a more climate-ready and resilient transmission system that can withstand more extreme weather events; address existing system capacity shortages and increased demand; and support future interconnections from renewable energy projects. In addition, NEP’s preferred solution uses substantial portions of the existing ROW, thereby minimizing alteration of new land resources to construct the Project. The purpose of the Project is to address existing asset conditions along the A1/B2 Lines that pose a threat to electrical reliability.

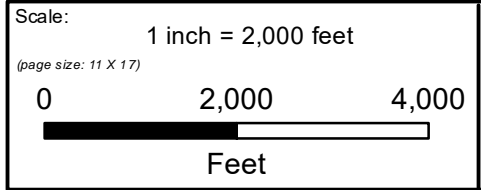
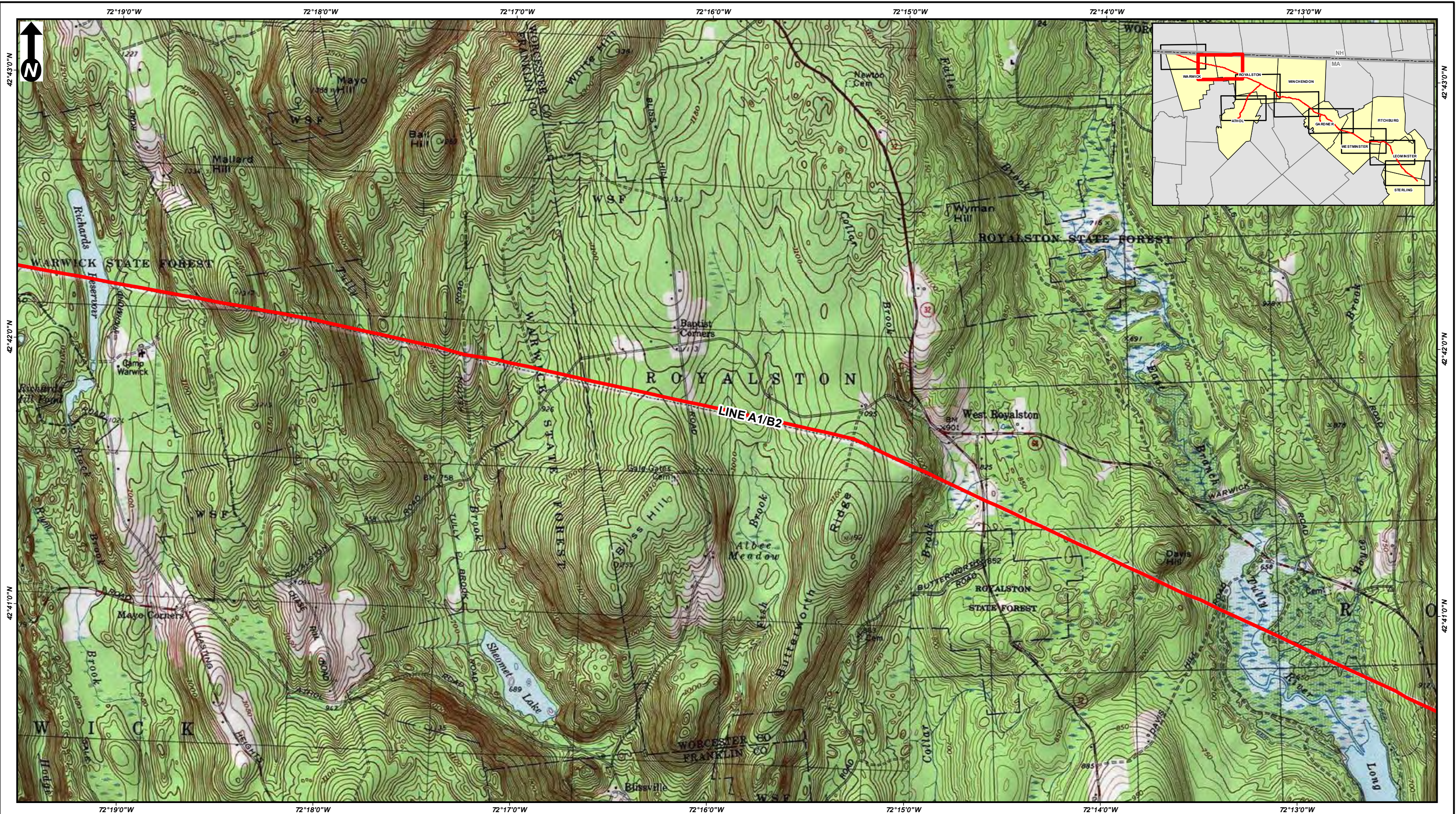
³⁶ EOEEA, 2011 as cited in Massachusetts State Hazard Mitigation and Climate Action Plan, 2018, p. 265. Retrieved 6/14/2022, <https://resilientma.org/shmcap-portal/static/media/SHMCAP-September2018-Full-Plan-web.286acceeb.pdf#page=90>

Findings: After the draft findings herein have been reviewed by the EOEEA - Climate Change Program, and revised by the Proponent, as appropriate, the EOEEA - Climate Change Program will make a finding that the foregoing information adequately describes the environmental impacts to the climate associated with the proposed Project, and that with the implementation of the mitigation measures described above, all feasible means will have been taken to avoid or minimize adverse climate impacts subject to the MEPA Interim Protocol on Climate Change Adaptation and Resiliency.

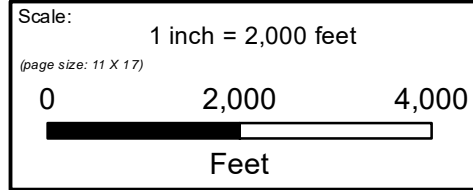
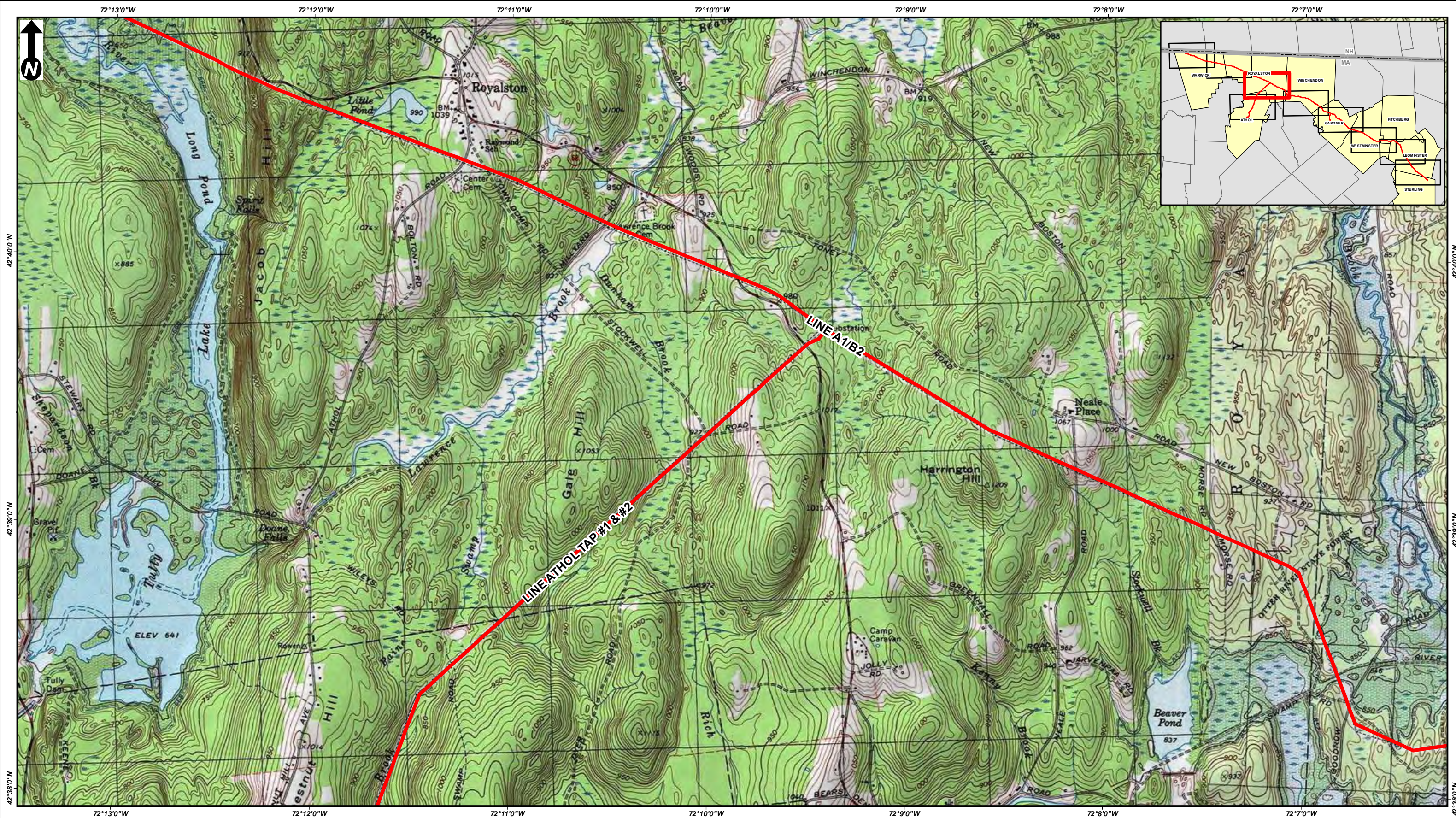


A1/B2 ACR PROJECT
Figure 1: USGS Site Location Map
Warwick, MA
Page 1 of 9

Source: 2013
National Geographic
Society, i-cubed

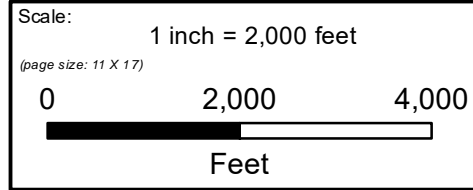
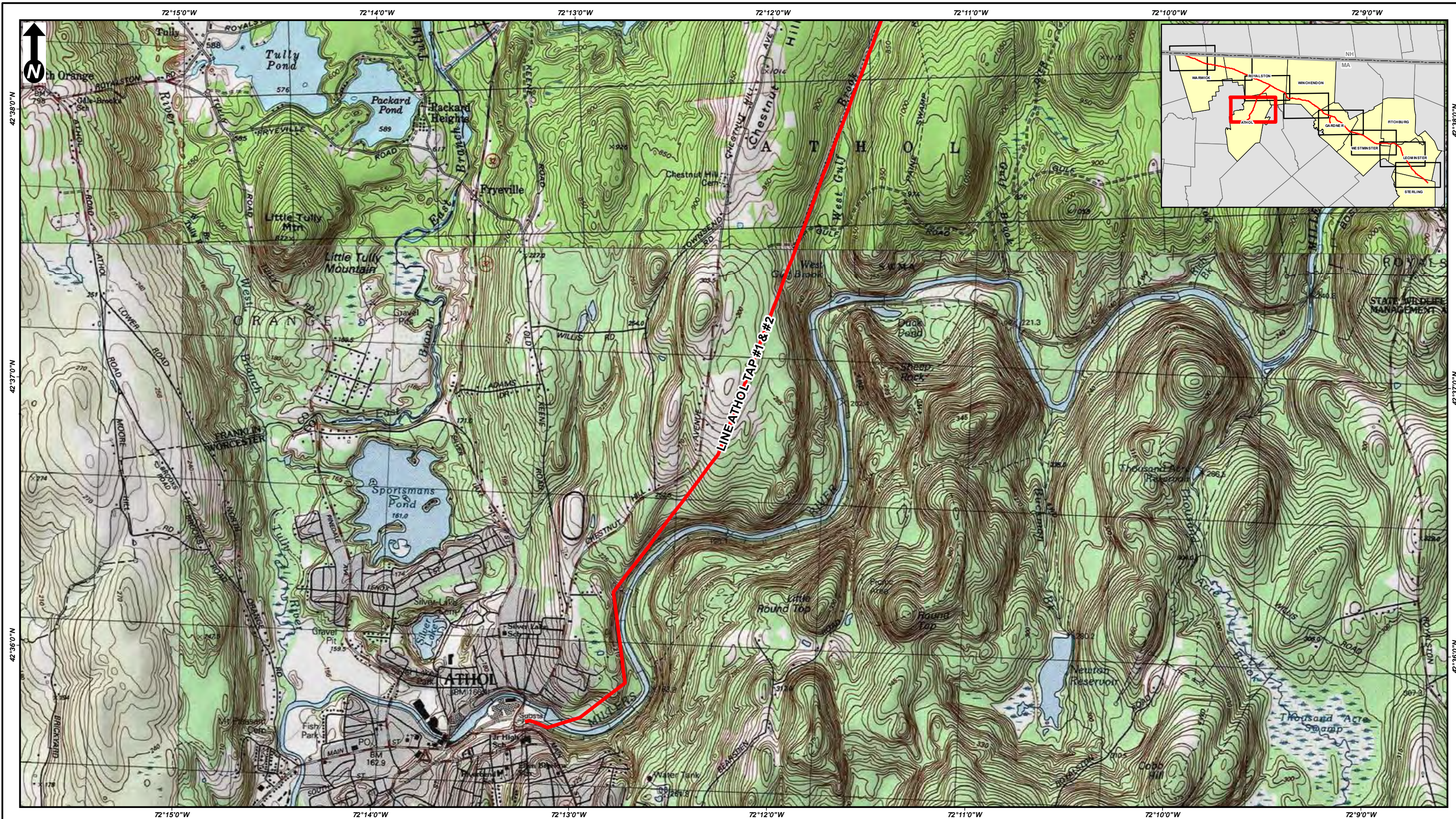


A1/B2 ACR PROJECT
Figure 1: USGS Site Location Map
Warwick & Royalston, MA
Page 2 of 9



A1/B2 ACR PROJECT
Figure 1: USGS Site Location Map
Royalston, Athol, & Winchendon, MA
Page 3 of 9

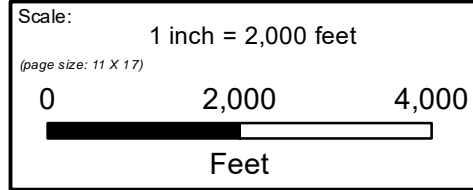
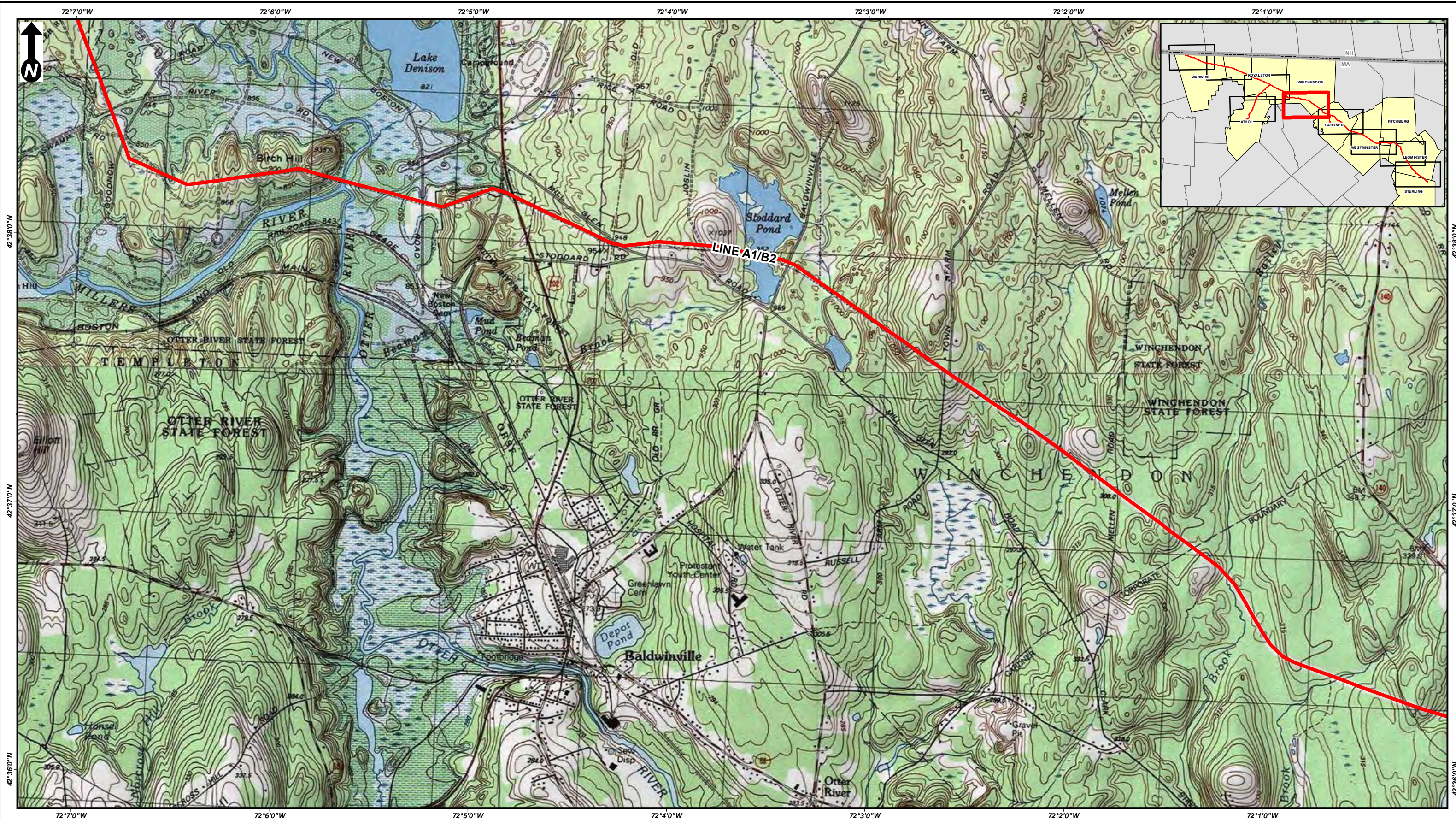
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National Geographic
Society, i-cubed



A1/B2 ACR PROJECT
Figure 1: USGS Site Location Map
Athol, MA
Page 4 of 9

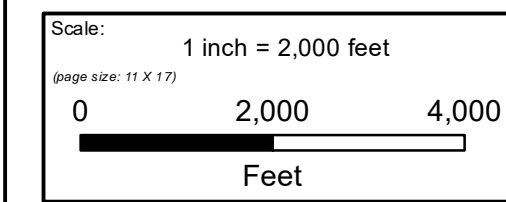
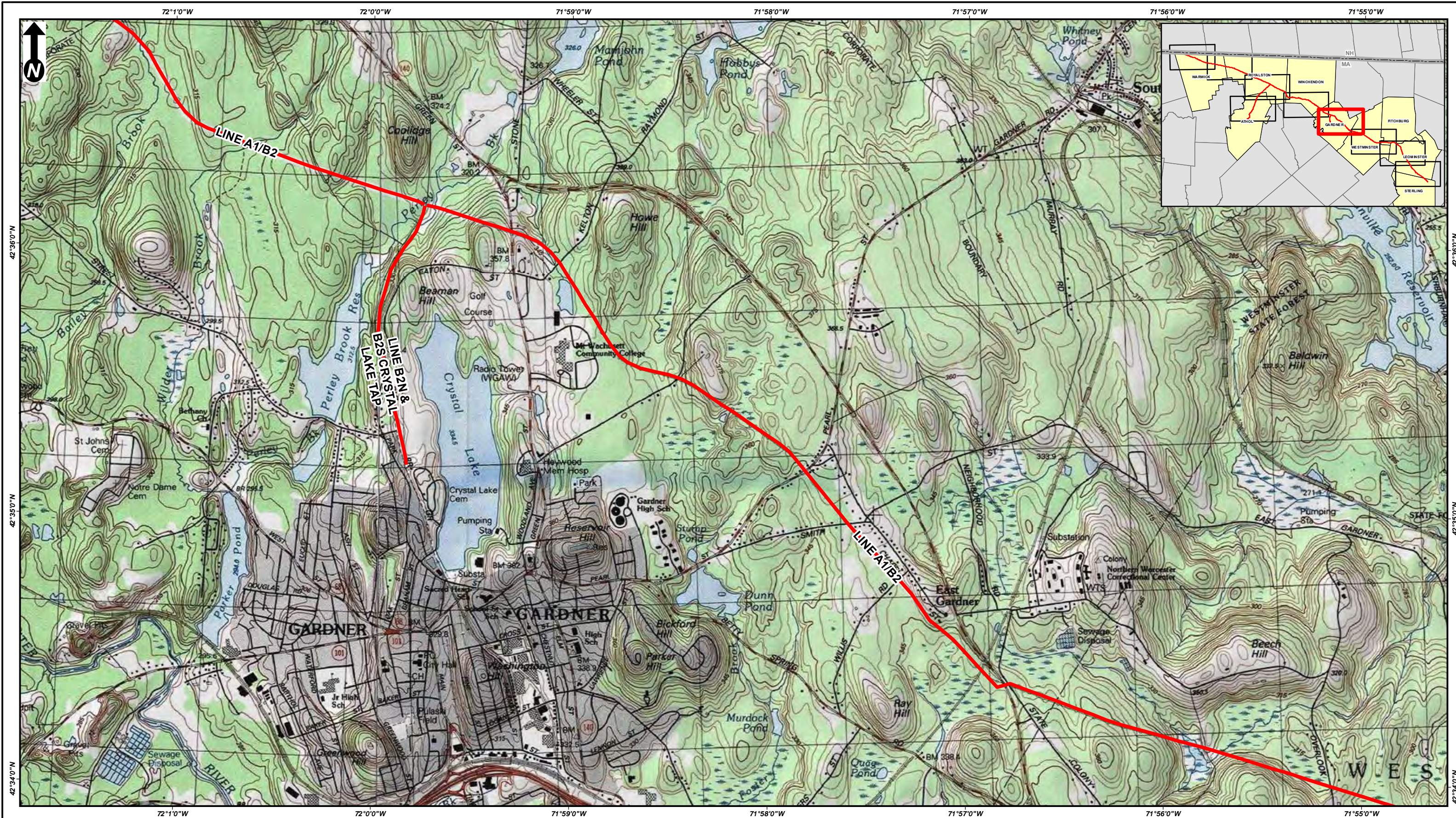
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National Geographic
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BSC GROUP



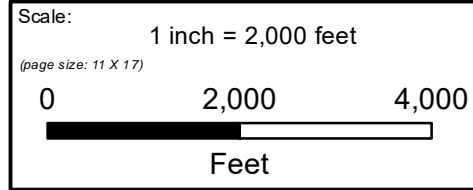
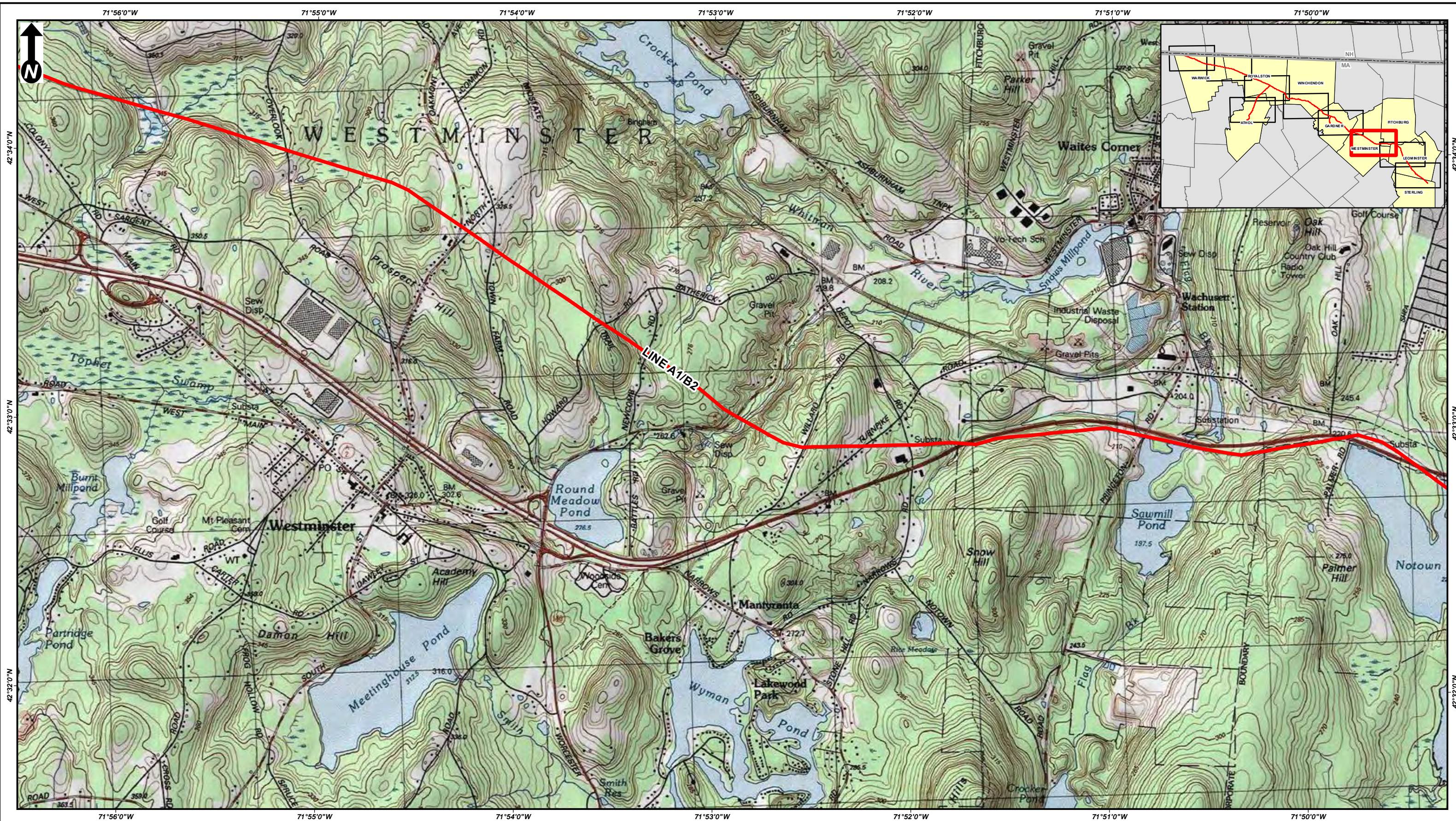
A1/B2 ACR PROJECT
Figure 1: USGS Site Location Map
Winchendon & Gardner, MA
Page 5 of 9

Source: 2013
National Geographic
Society, i-cubed



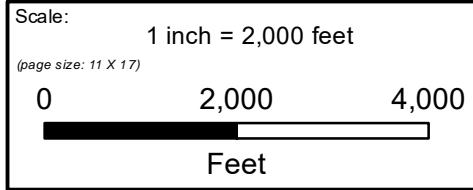
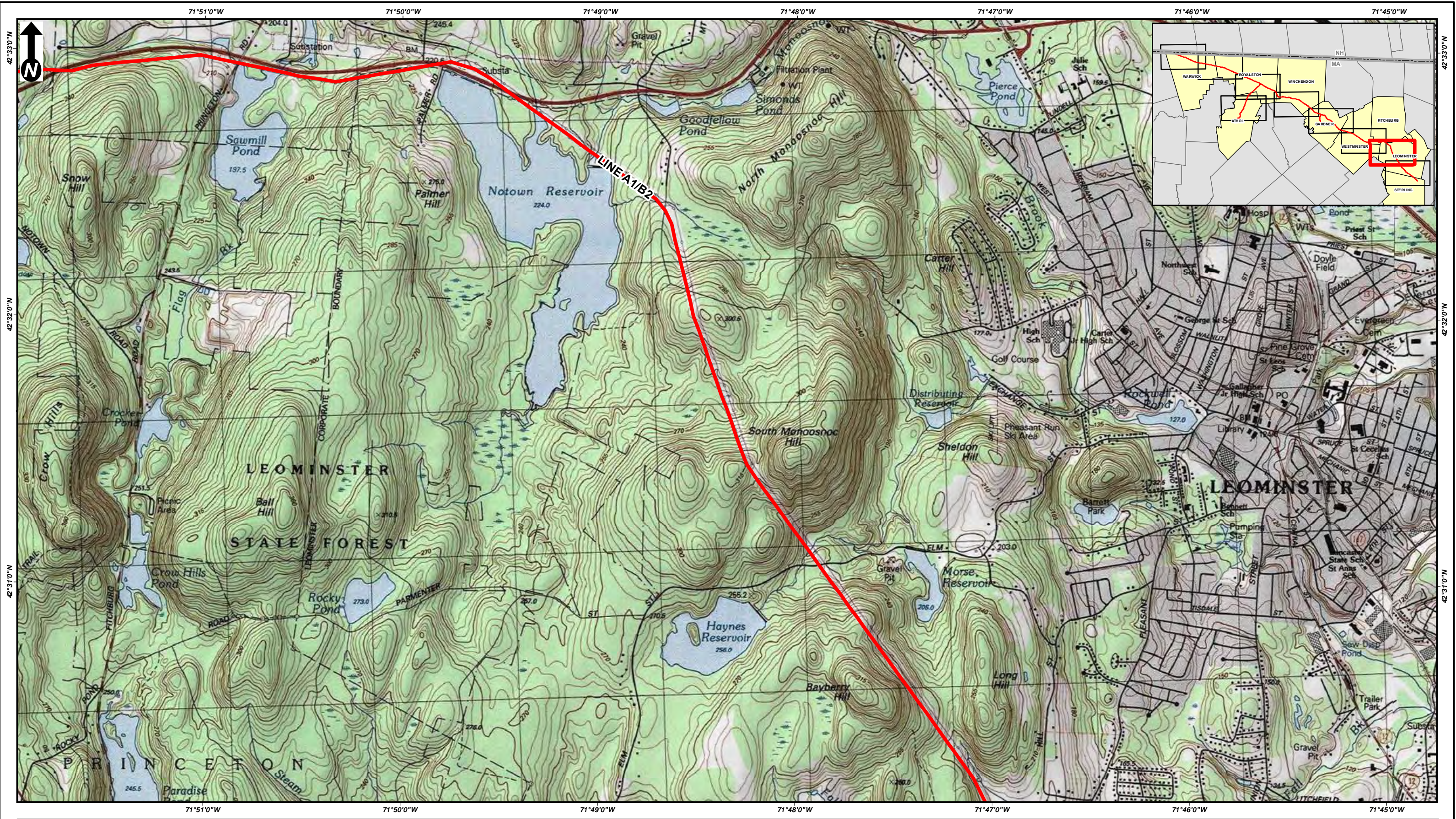
A1/B2 ACR PROJECT
Figure 1: USGS Site Location Map
Gardner & Westminister, MA
Page 6 of 9

Source: 2013
National Geographic
Society, i-cubed

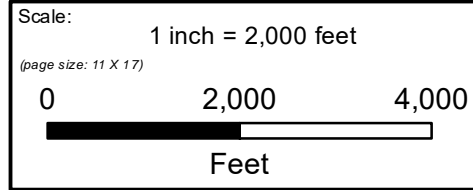
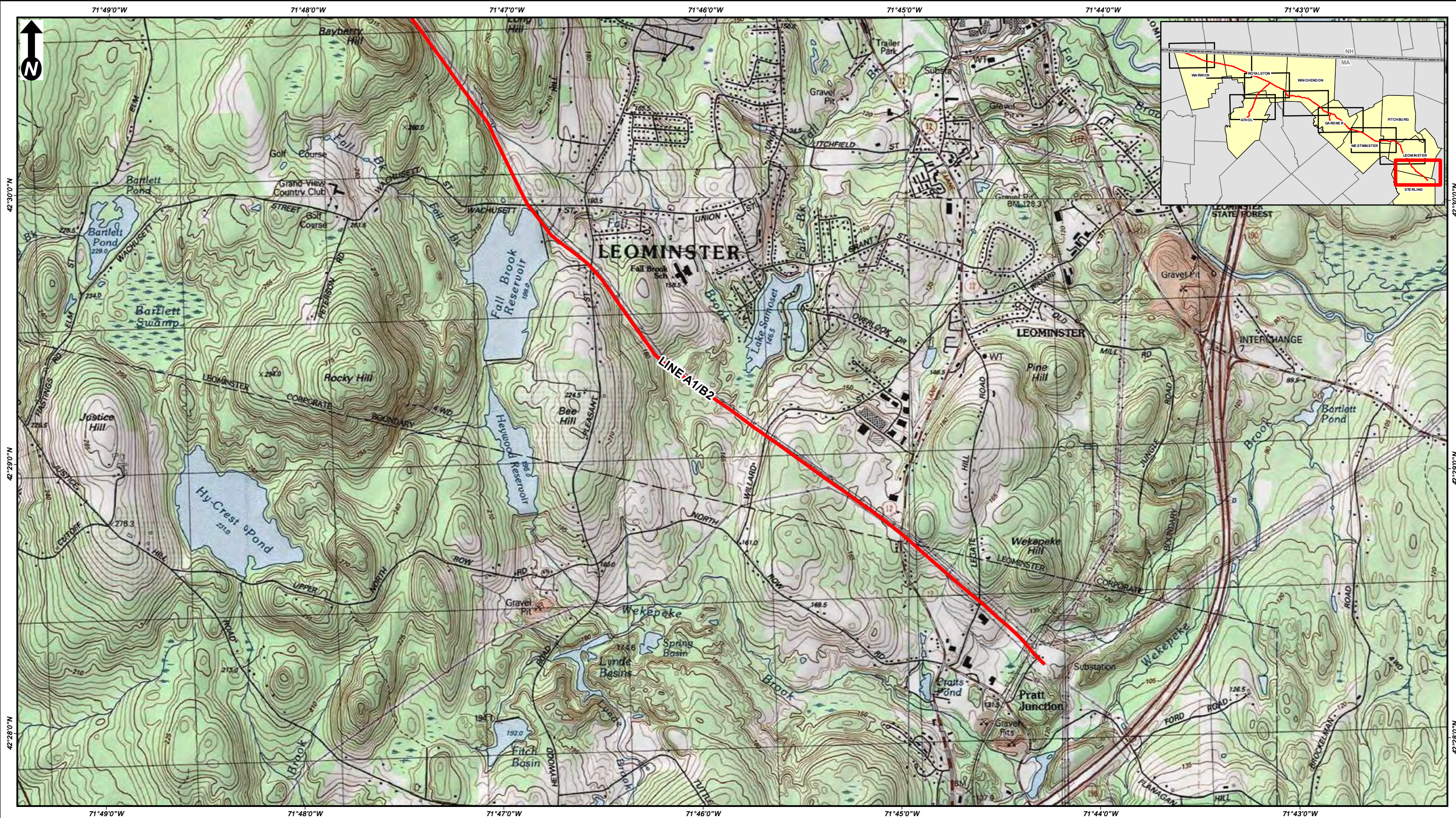


A1/B2 ACR PROJECT
Figure 1: USGS Site Location Map
Westminister, Fitchburg, & Leominster, MA
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Source: 2013
National Geographic
Society, i-cubed



A1/B2 ACR PROJECT
Figure 1: USGS Site Location Map
Westminster, Fitchburg, & Leominster, MA
Page 8 of 9

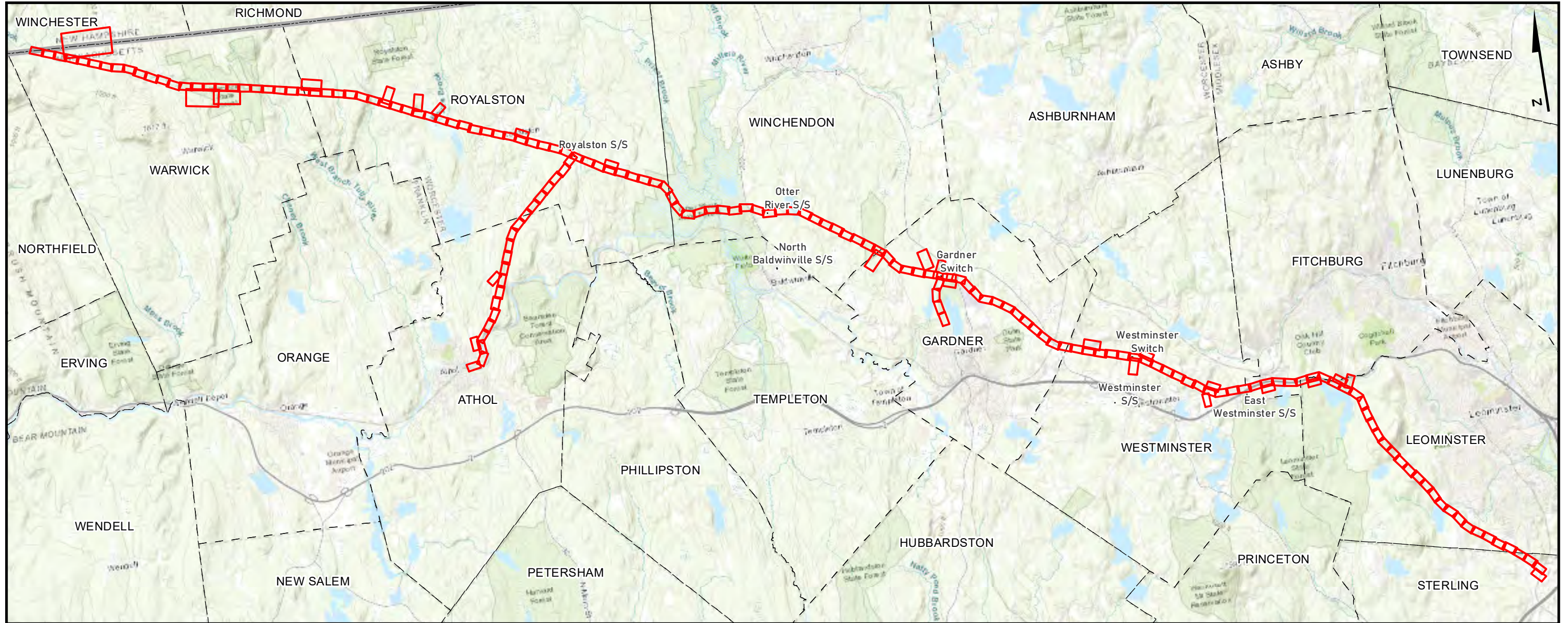


A1/B2 ACR PROJECT
Figure 1: USGS Site Location Map
Leominster & Sterling, MA
Page 9 of 9

Source: 2013
National Geographic
Society, i-cubed

A1/B2 ACR Project

Warwick, Royalston, Athol, Wichendon, Gardner,
Westminster, Fitchburg, Leominster, & Sterling, MA
MEPA General Purpose Plans - 50% Design
September 12, 2022



PREPARED FOR:



40 Sylvan Road
Waltham, MA 02451

INDEX OF FIGURES

- T1 - TITLE SHEET
- 1 - 168 - MAP SHEETS
- 1A - 168A - OFF ROW ACCESS SHEETS

ISSUED FOR PERMITTING
NOT CONSTRUCTION

PREPARED BY:

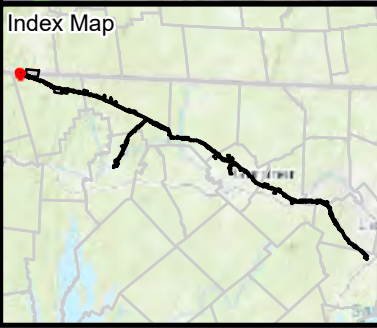


33 Waldo Street
Worcester, MA 01608

The LOD will be refined as the planning process continues and landowner coordination will be conducted as necessary.



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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

1 inch = 100 feet
 0 50 100 Feet

**Indicates Layers Set to Transparency*

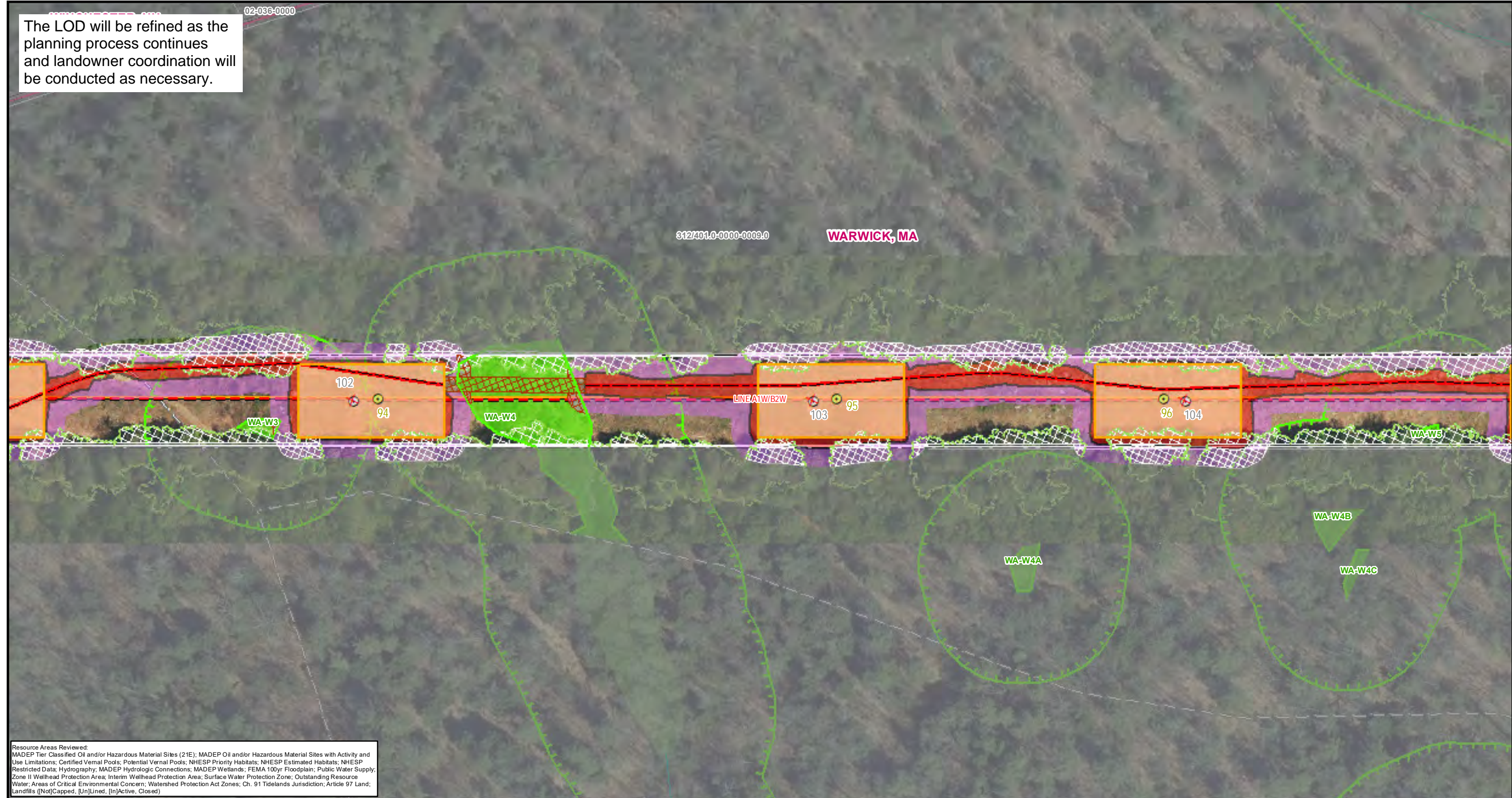
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

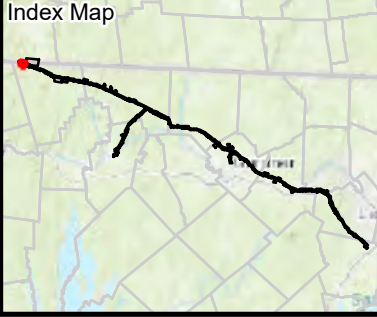
Warwick, MA
 Page 1 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Best Management Practices	Existing Conditions
<ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting 	<ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Approximate Swale Edge of ROW
Article 97 Lands	Environmental Justice 2020 Populations
<ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<ul style="list-style-type: none"> Minority & Income Minority Income
Interim Wellhead Protection Area	Other
<ul style="list-style-type: none"> Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

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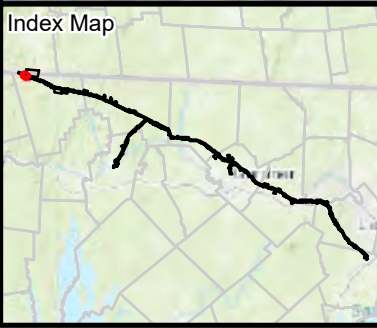
*Indicates Layers Set to Transparency

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities	Resource Areas
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Best Management Practices	Existing Conditions
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Design	Environmental Justice 2020 Populations
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal 	<ul style="list-style-type: none"> Minority & Income Minority Income
Interim Wellhead Protection Area	Article 97 Lands
<ul style="list-style-type: none"> Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail
Interim Wellhead Protection Area	Environmental Justice 2020 Populations
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

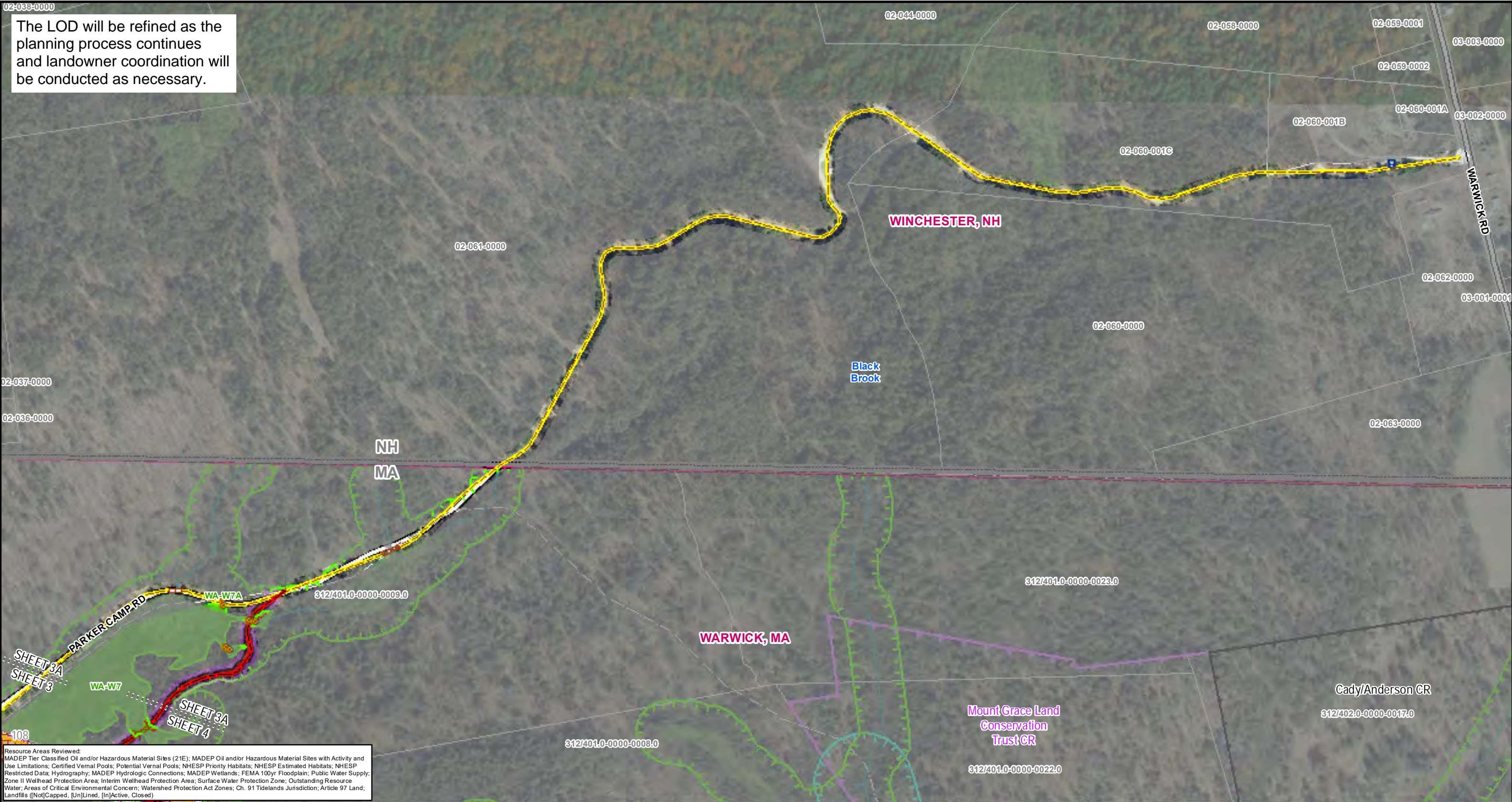
September 12, 2022

Warwick, MA
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1 inch = 100 feet
0 50 100
Feet

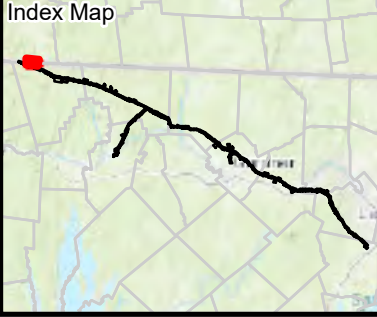
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

<p>Construction Activities</p> <ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<p>Designed Road Type 3-5</p> <p>Work Envelope</p> <p>Pull Pad <p>Limit of Cut/Fill <p>Limit of Disturbance</p> <p>Proposed Retaining Wall</p> <p>Proposed Tree Removal</p> <p>Best Management Practices</p> <p>Construction Matting</p> <p>Existing Conditions</p> <p>Existing Structure</p> <p>Other Existing Transmission Centerline</p> <p>Edge of ROW</p> </p></p>	<p>Existing Access</p> <p>Existing Tree Line</p> <p>Resource Areas</p> <p>Delineated Wetland Edge</p> <p>Delineated Wetland</p> <p>Delineated Vernal Pool Extent*</p> <p>Delineated Top of Bank</p> <p>Delineated Stream Centerline</p> <p>Delineated Ordinary High Water</p> <p>Approximate Top of Bank</p> <p>Approximate Ordinary High Water</p> <p>Approximate Swale</p> <p>Delineated Open Water*</p> <p>Approximate Wetland Edge</p> <p>Approximate Wetland</p> <p>State Streams</p> <p>State Wetlands*</p> <p>State Open Water*</p> <p>100ft Buffer to Wetlands & Streams</p> <p>200ft Riverfront Area</p> <p>FEMA 100yr Floodplain*</p> <p>Certified Vernal Pools</p> <p>Potential Vernal Pools</p> <p>NHESP Priority & Estimated Habitats</p> <p>NHESP Restricted Data</p>	<p>Interim Wellhead Protection Area</p> <p>Zone II Wellhead Protection Area</p> <p>Surface Water Protection Zone</p> <p>Outstanding Resource Water</p> <p>Public Water Supply</p> <p>MADEP (21E) Site</p> <p>MADEP AUL Site</p> <p>Railroad</p> <p>DCR Trails</p> <p>Hiking Trails</p> <p>Long Distance Trails</p> <p>Parcel Boundary</p> <p>National Grid Property</p> <p>Town Boundary</p> <p>State Boundary</p> <p>Gate</p> <p>Culvert</p> <p>Fence</p> <p>Stonewall</p> <p>Guardrail</p> <p>Environmental Justice 2020 Populations</p> <p>Minority & Income</p> <p>Minority</p> <p>Income</p>	<p>Article 97 Lands</p> <p>DCR-State Parks & Recreation</p> <p>Department of Fish & Game</p> <p>Land Trust</p> <p>Municipal</p> <p>Private</p>
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1 inch = 375 feet

0 200 400 Feet

*Indicates Layers Set to Transparency

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

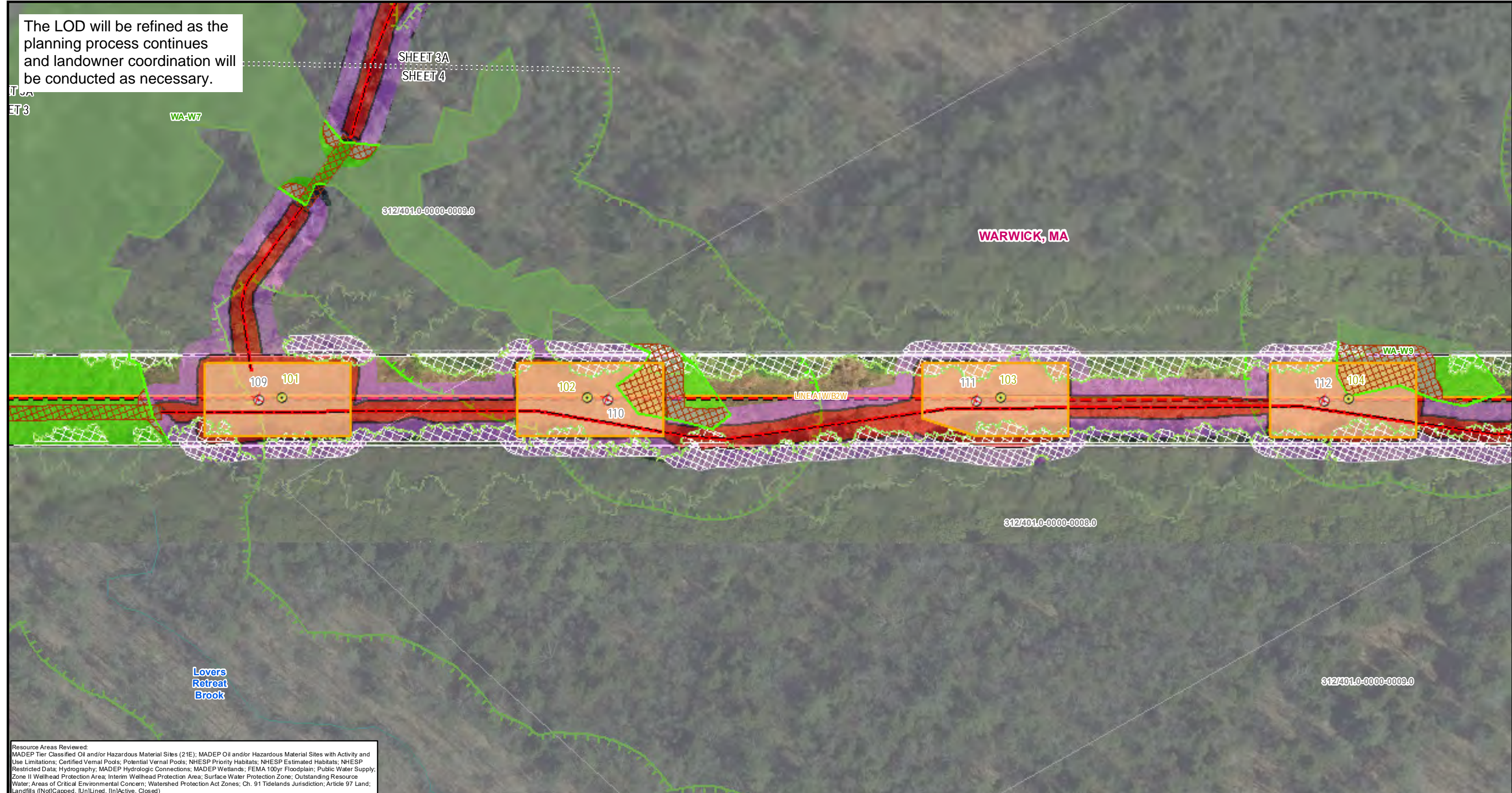
September 12, 2022

Warwick, MA

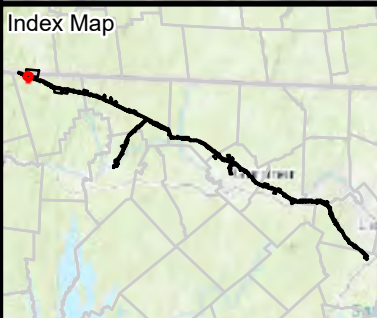
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities		Resource Areas		Interim Wellhead Protection Area		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Interim Wellhead Protection Area	National Grid Property	DCR-State Parks & Recreation	Department of Fish & Game
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Zone II Wellhead Protection Area	Town Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	Limit of Wetland Edge	State Streams	Surface Water Protection Zone	Municipal Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Outstanding Resource Water	Gate	Department of Fish & Game	Department of Fish & Game
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	Public Water Supply	Culvert	Department of Fish & Game	Department of Fish & Game
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	100ft Buffer to Wetlands & Streams	200ft Riverfront Area	MADEP (21E) Site	Fence	Department of Fish & Game	Department of Fish & Game
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	FEMA 100yr Floodplain*	MADEP AUL Site	Stonewall	Department of Fish & Game	Department of Fish & Game
General Maintenance	Best Management Practices	Delineated Ordinary High Water	Certified Vernal Pools	Railroad	Guardrail	Department of Fish & Game	Department of Fish & Game
Proposed Centerline	Construction Matting	Approximate Top of Bank	Potential Vernal Pools	DCR Trails	Private	Department of Fish & Game	Department of Fish & Game
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	NHESP Priority & Estimated Habitats	Hiking Trails		Department of Fish & Game	Department of Fish & Game
Standard Road Type 1 & 2	Other Existing Transmission Centerline	Approximate Swale	NHESP Restricted Data	Long Distance Trails		Department of Fish & Game	Department of Fish & Game
	Edge of ROW	Delineated Open Water*		Parcel Boundary		Department of Fish & Game	Department of Fish & Game

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

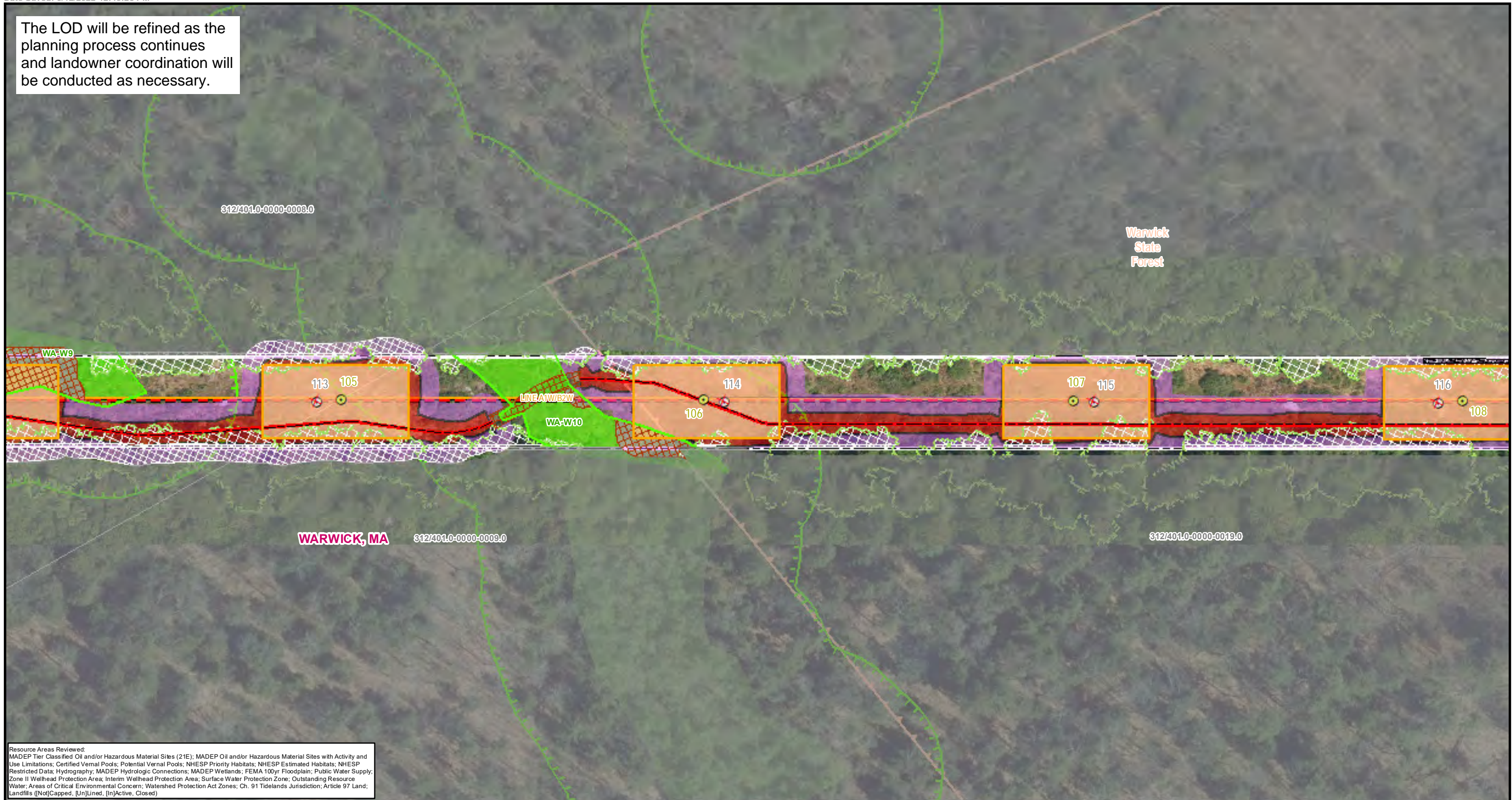
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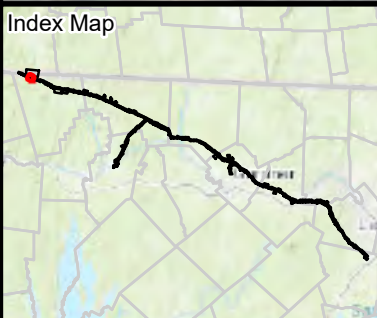
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

Warwick, MA
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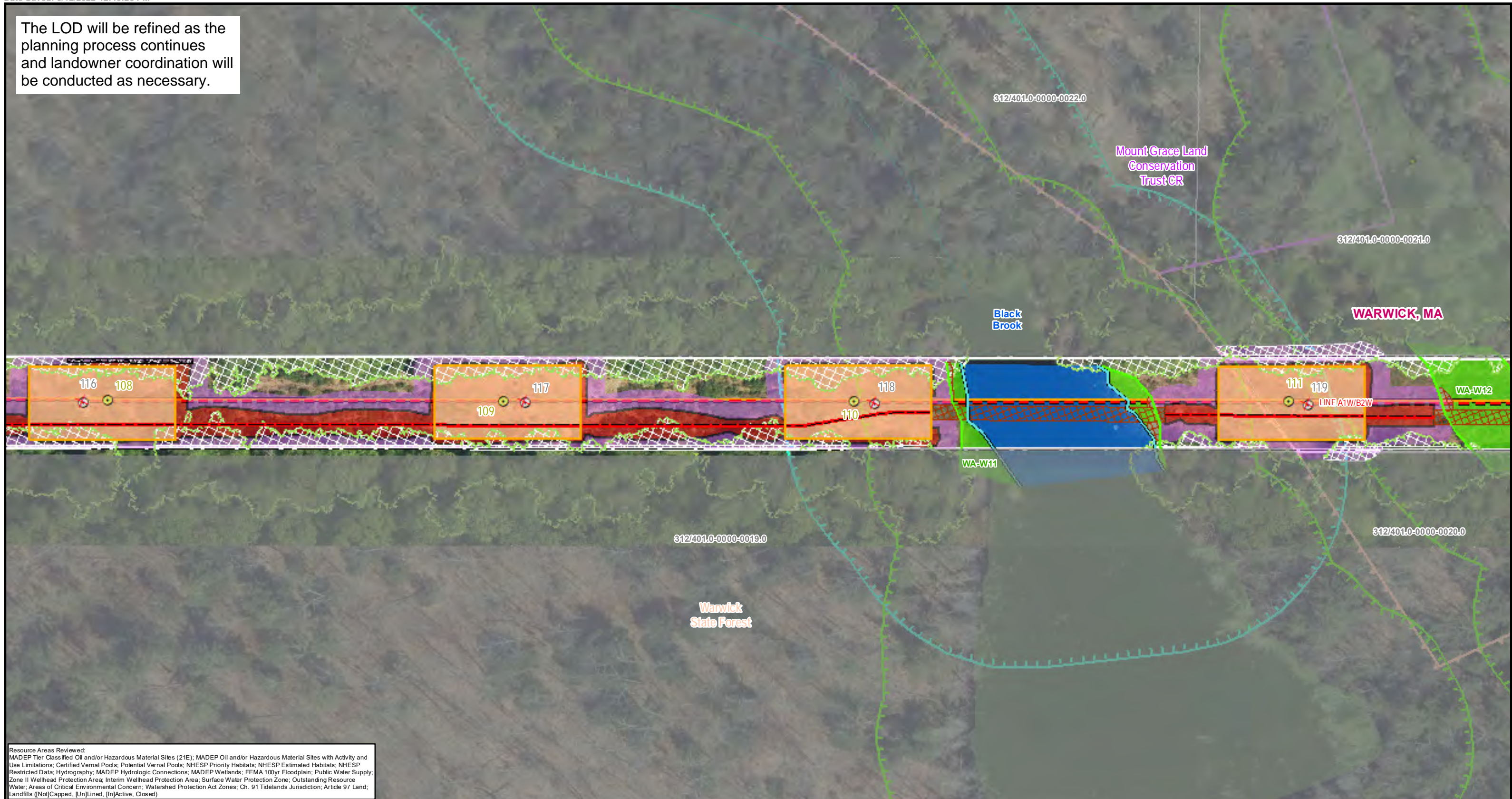
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1 inch = 100 feet

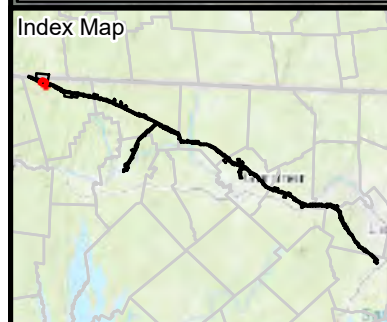
Feet

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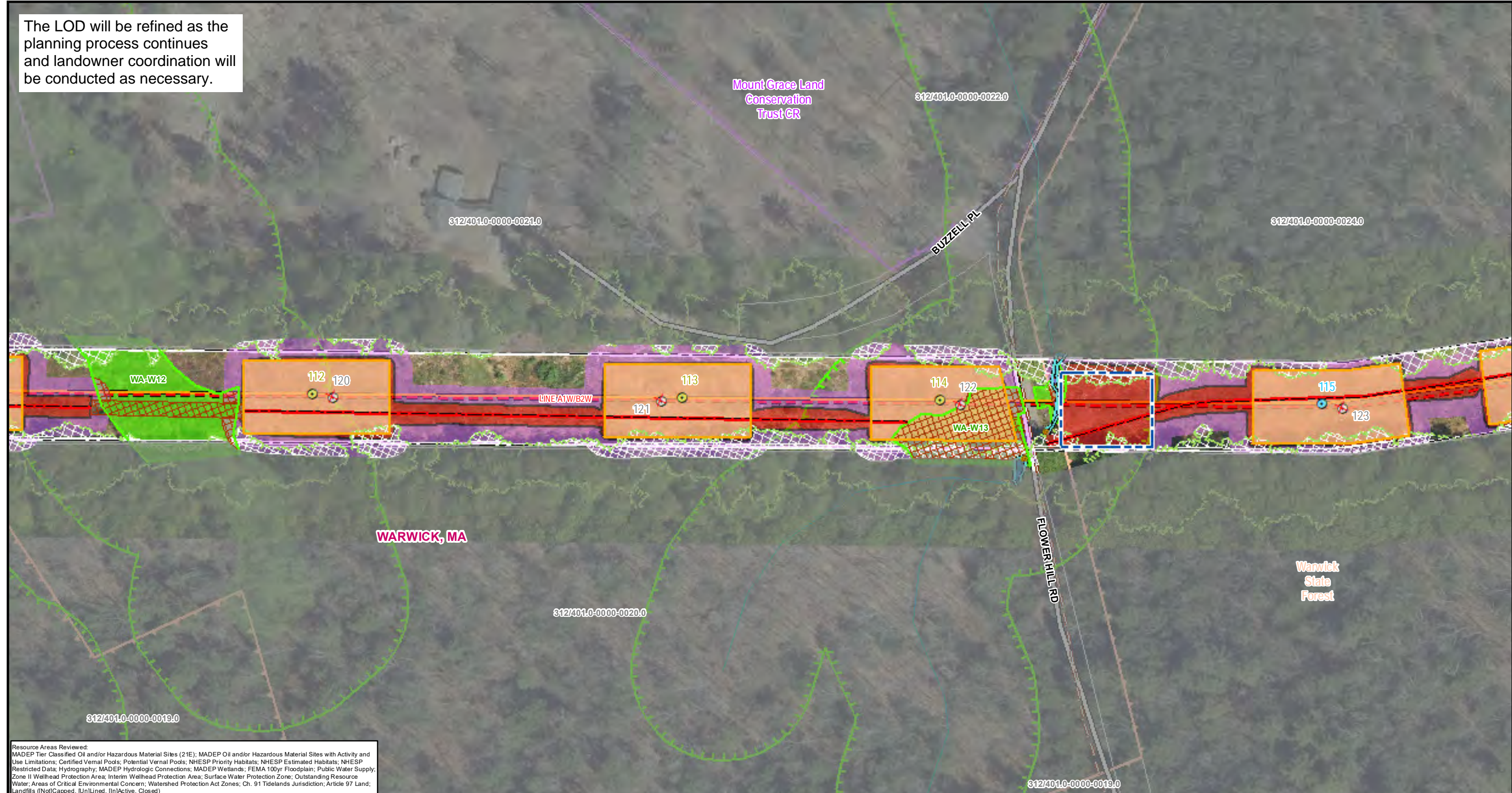
Warwick, MA
 Page 6 of 168

1 inch = 100 feet
 0 50 100
 Feet

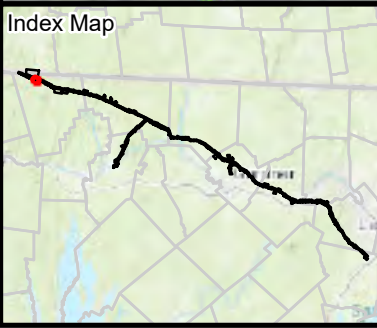
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Resource Areas Reviewed:
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Construction Activities		Resource Areas		Interim Wellhead Protection Area		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Interim Wellhead Protection Area	National Grid Property	DCR-State Parks & Recreation	Department of Fish & Game
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Zone II Wellhead Protection Area	Town Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	Limit of Disturbance	State Streams	Surface Water Protection Zone	State Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland Edge	State Wetlands*	Outstanding Resource Water	Gate	Department of Fish & Game	Department of Fish & Game
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Wetland	State Open Water*	Public Water Supply	Culvert	Department of Fish & Game	Department of Fish & Game
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Vernal Pool Extent*	100ft Buffer to Wetlands & Streams	MADEP (21E) Site	Fence	Department of Fish & Game	Department of Fish & Game
Reuse Structure	Proposed Tree Removal	Delineated Top of Bank	200ft Riverfront Area	MADEP AUL Site	Stonewall	Department of Fish & Game	Department of Fish & Game
General Maintenance	Construction Matting	Delineated Stream Centerline	FEMA 100yr Floodplain*	Railroad	Guardrail	Department of Fish & Game	Department of Fish & Game
Proposed Centerline	Best Management Practices	Delineated Ordinary High Water	Certified Vernal Pools	DCR Trails	Environmental Justice 2020 Populations	Department of Fish & Game	Department of Fish & Game
Remove OH Line	Existing Structure	Approximate Top of Bank	Potential Vernal Pools	Hiking Trails	Minority & Income	Department of Fish & Game	Department of Fish & Game
Standard Road Type 1 & 2	Other Existing Transmission Centerline	Approximate Ordinary High Water	NHESP Priority & Estimated Habitats	Long Distance Trails	Minority	Department of Fish & Game	Department of Fish & Game
	Edge of ROW	Delineated Swale	NHESP Restricted Data	Parcel Boundary	Income	Department of Fish & Game	Department of Fish & Game
		Delineated Open Water*				Department of Fish & Game	Department of Fish & Game

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Figure 2: MEPA General Purpose Plans
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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nationalgrid
BSC GROUP

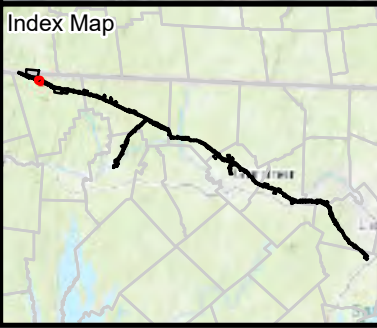
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income 	<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private

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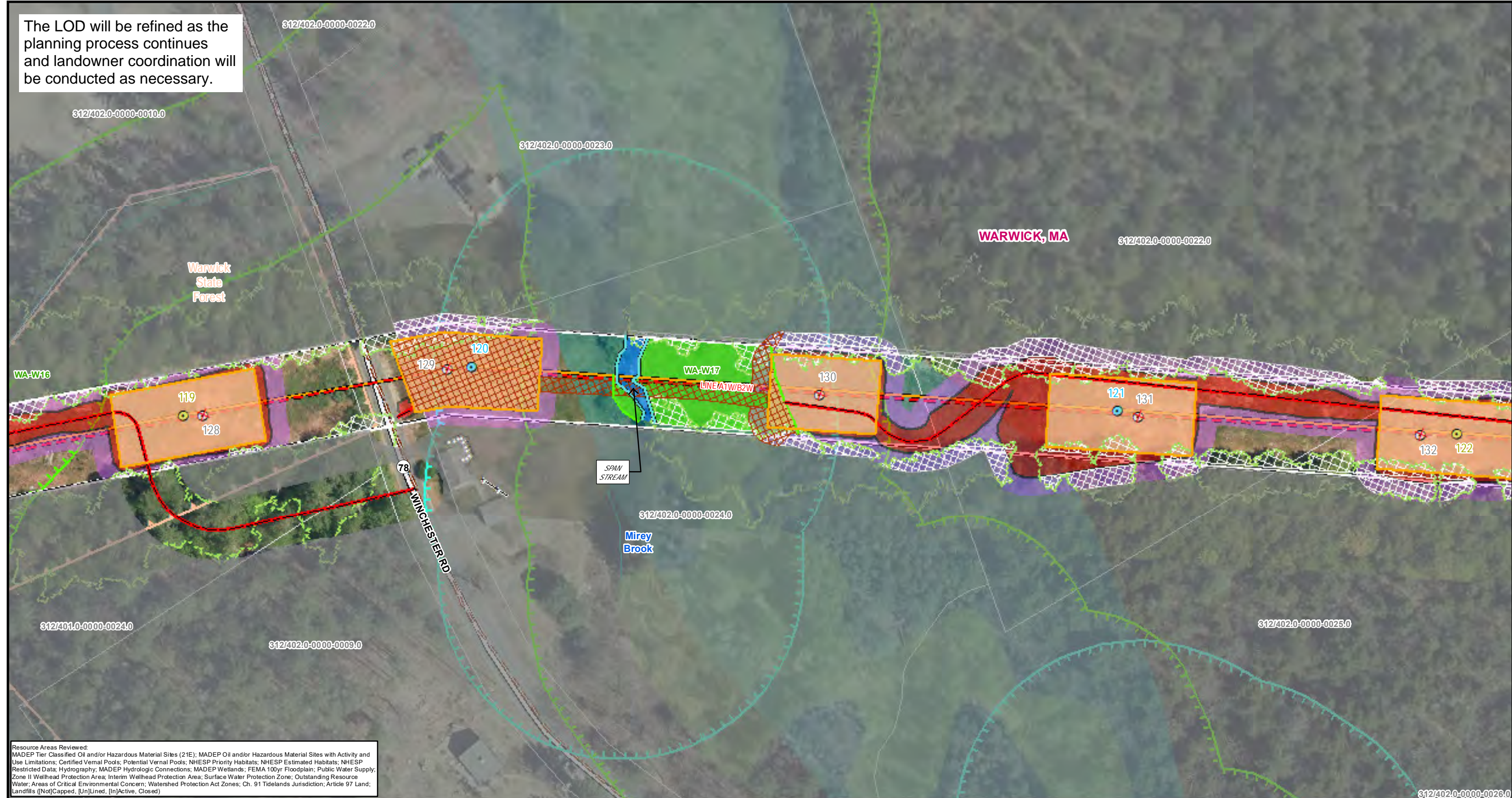
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

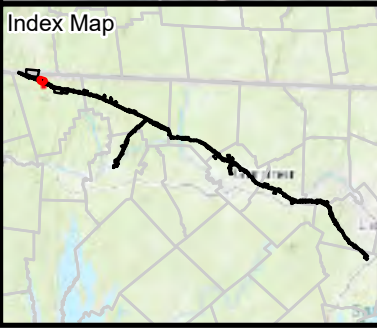
Warwick, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend	
Construction Activities	Resource Areas
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Best Management Practices	Existing Conditions
<ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting Construction Practices Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary
Article 97 Lands	Environmental Justice 2020 Populations
<ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<ul style="list-style-type: none"> Minority & Income Minority Income

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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
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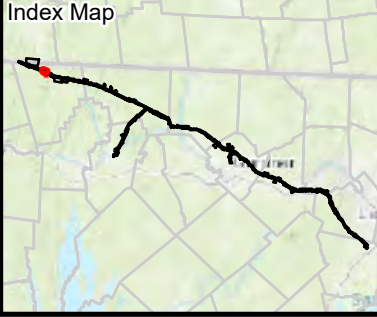
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<p>1 inch = 100 feet</p> <p>0 50 100</p> <p>Feet</p> <p>*Indicates Layers Set to Transparency</p>

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

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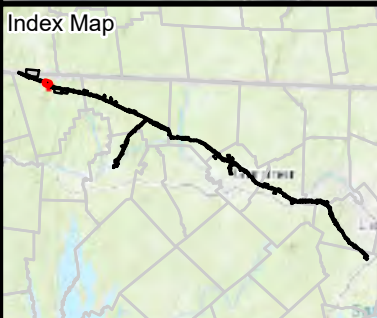
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

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September 12, 2022

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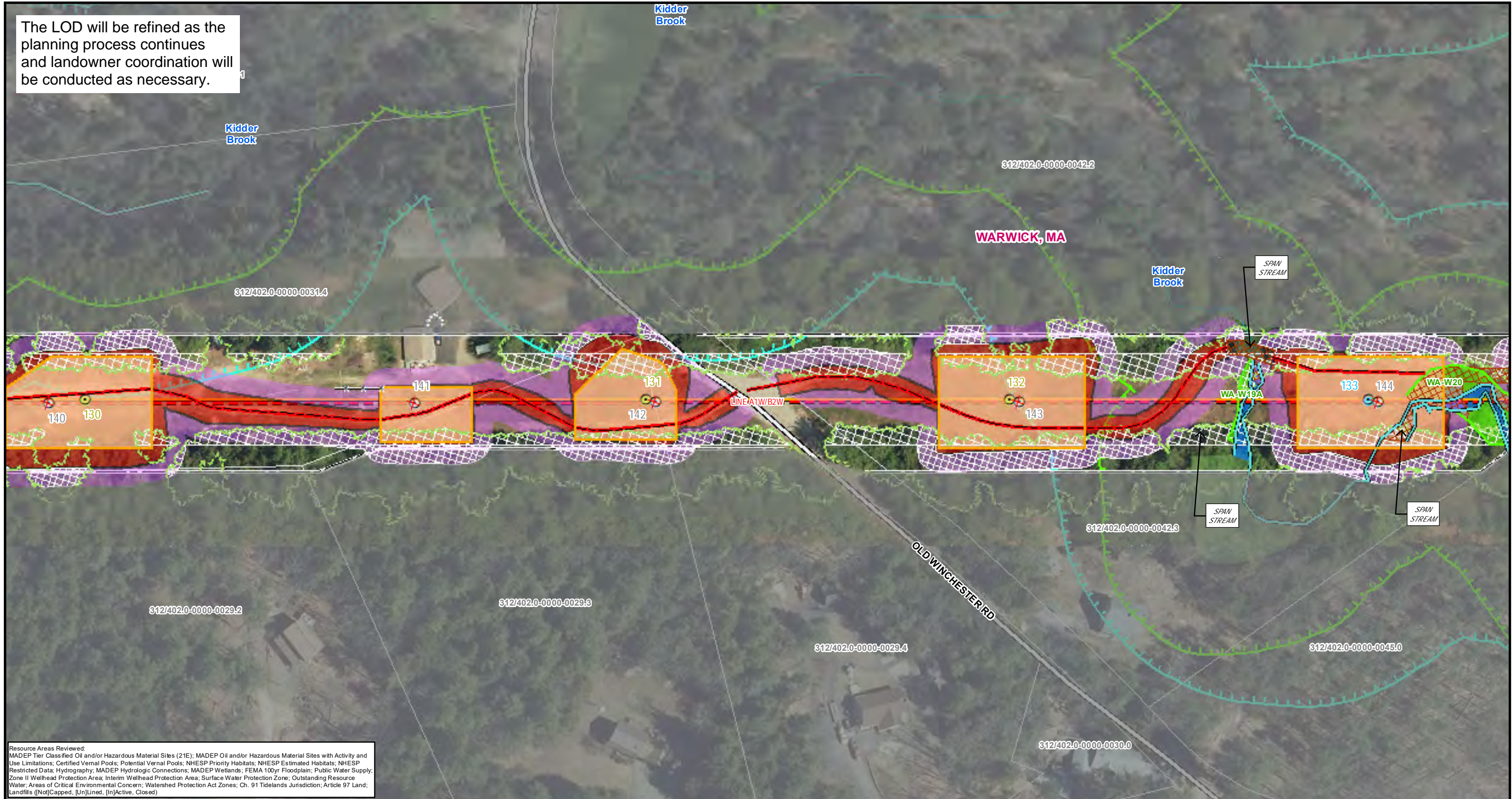
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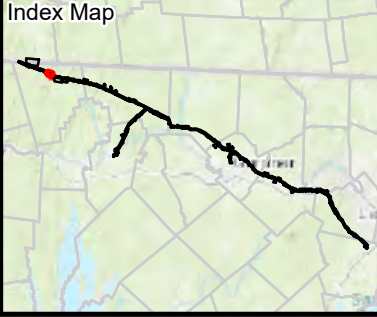
Feet

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Legend	
Remove Structure	Designed Road Type 3-5
Install Structure (Concrete Caisson)	Work Envelope
Install Structure (Direct Embed)	Pull Pad
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill
In Kind Direct Embed Structure Replacement	Limit of Disturbance
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall
Reuse Structure	Proposed Tree Removal
General Maintenance	Proposed Tree Removal
Proposed Centerline	Proposed Tree Removal
Remove OH Line	Proposed Tree Removal
Standard Road Type 1 & 2	Proposed Tree Removal
Existing Access	Approximate Wetland Edge
Existing Tree Line	Approximate Wetland
Delineated Wetland Edge	State Streams
Delineated Wetland	State Wetlands*
Delineated Vernal Pool Extent*	State Open Water*
Delineated Top of Bank	100ft Buffer to Wetlands & Streams
Delineated Stream Centerline	200ft Riverfront Area
Delineated Ordinary High Water	FEMA 100yr Floodplain*
Approximate Top of Bank	Certified Vernal Pools
Approximate Ordinary High Water	Potential Vernal Pools
Approximate Swale	NHESP Priority & Estimated Habitats
Delineated Open Water*	NHESP Restricted Data
Interim Wellhead Protection Area	Zone II Wellhead Protection Area
Surface Water Protection Zone	Outstanding Resource Water
Public Water Supply	MADEP (21E) Site
MADEP AUL Site	MADEP AUL Site
Railroad	DCR Trails
Hiking Trails	Long Distance Trails
Parcel Boundary	Parcel Boundary
National Grid Property	Town Boundary
State Boundary	State Boundary
Gate	Gate
Culvert	Culvert
Fence	Fence
Stonewall	Stonewall
Guardrail	Guardrail
Environmental Justice 2020 Populations	Environmental Justice 2020 Populations
Minority & Income	Minority & Income
Minority	Minority
Income	Income

A1/B2 ACR PROJECT

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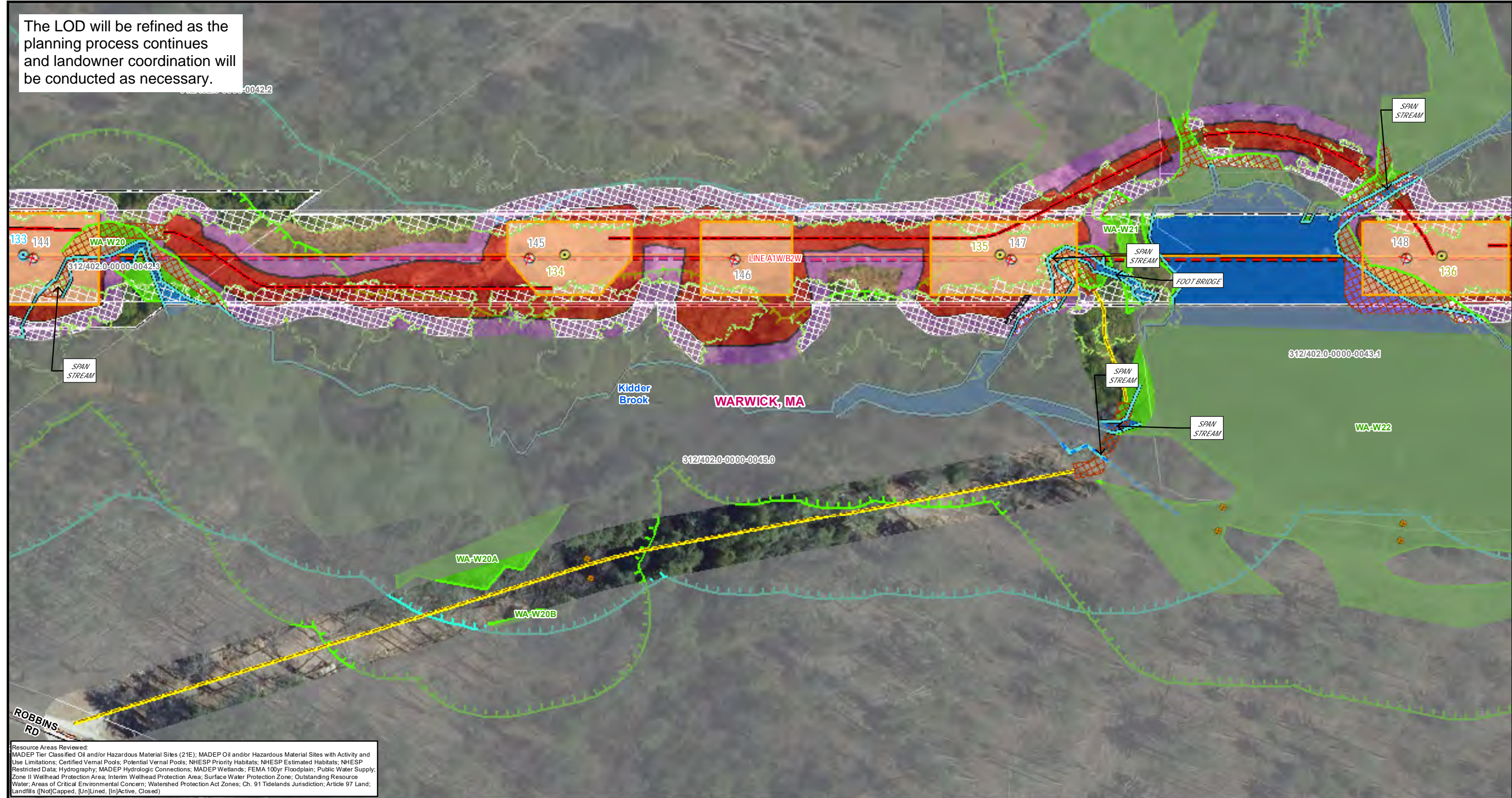
Warwick, MA
 Page 12 of 168

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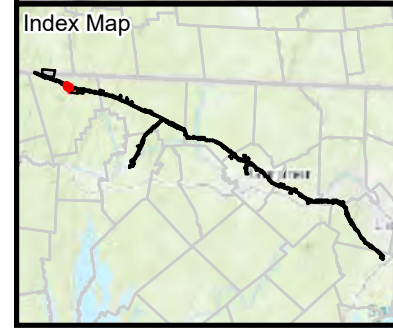
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Legend	
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A1/B2 ACR PROJECT

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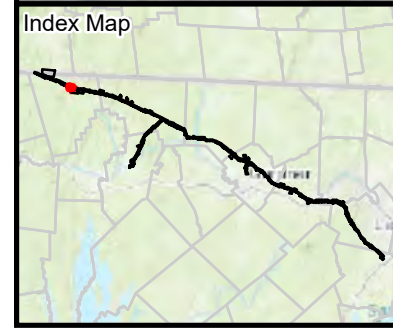
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Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams		
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

A1/B2 ACR PROJECT

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50% Design

September 12, 2022

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Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Environmental Justice 2020 Populations

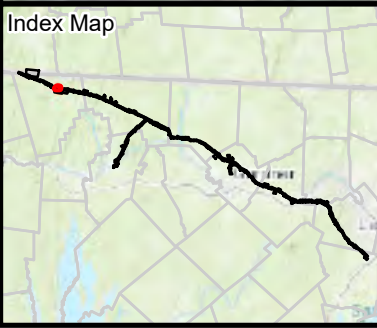
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In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

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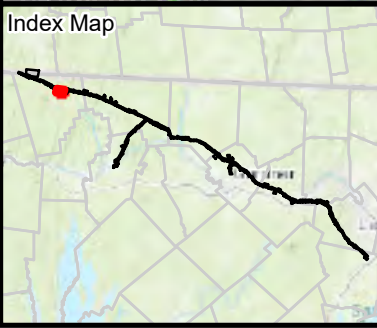
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User

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SHEET 15
 SHEET 15A



Resource Areas Reviewed:
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Minority
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Income	Income
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Stream Centerline	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Ordinary High Water	200ft Riverfront Area		
General Maintenance	Best Management Practices	Approximate Top of Bank	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Ordinary High Water	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Swale	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Delineated Open Water*	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline		NHESP Restricted Data		
	Edge of ROW				

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

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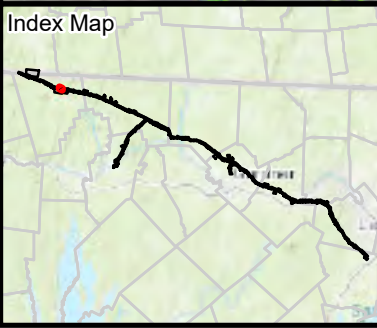
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nationalgrid
BSC GROUP

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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	National Grid Property	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Town Boundary	Minority
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	State Boundary	Income
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Gate	
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	Culvert	
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams	Fence	
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area	Stonewall	
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*	Guardrail	
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

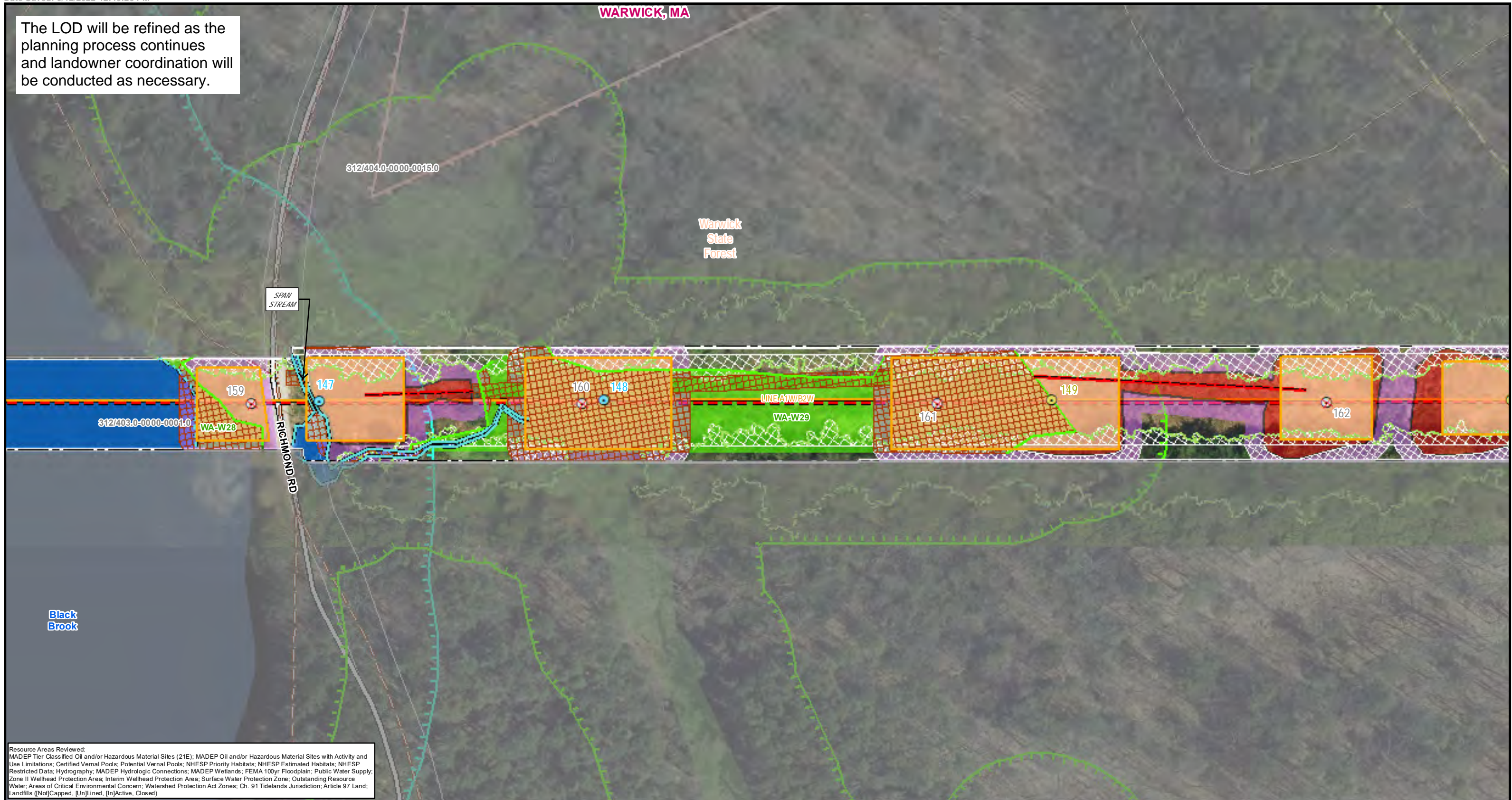
Warwick, MA
 Page 16 of 168

1 inch = 100 feet
 0 50 100
 Feet

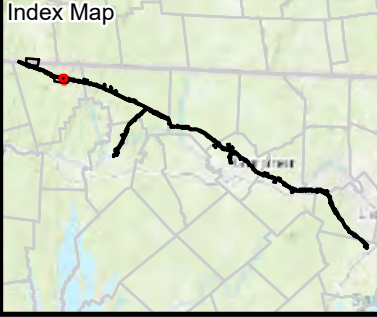
**Indicates Layers Set to Transparency*

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income
<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	
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A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

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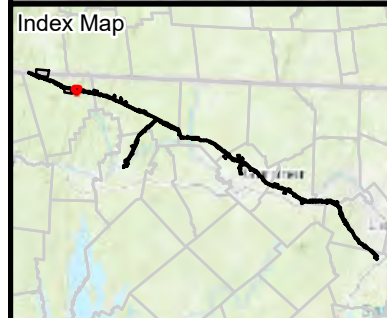
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SHEET 18
 SHEET 18A



Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

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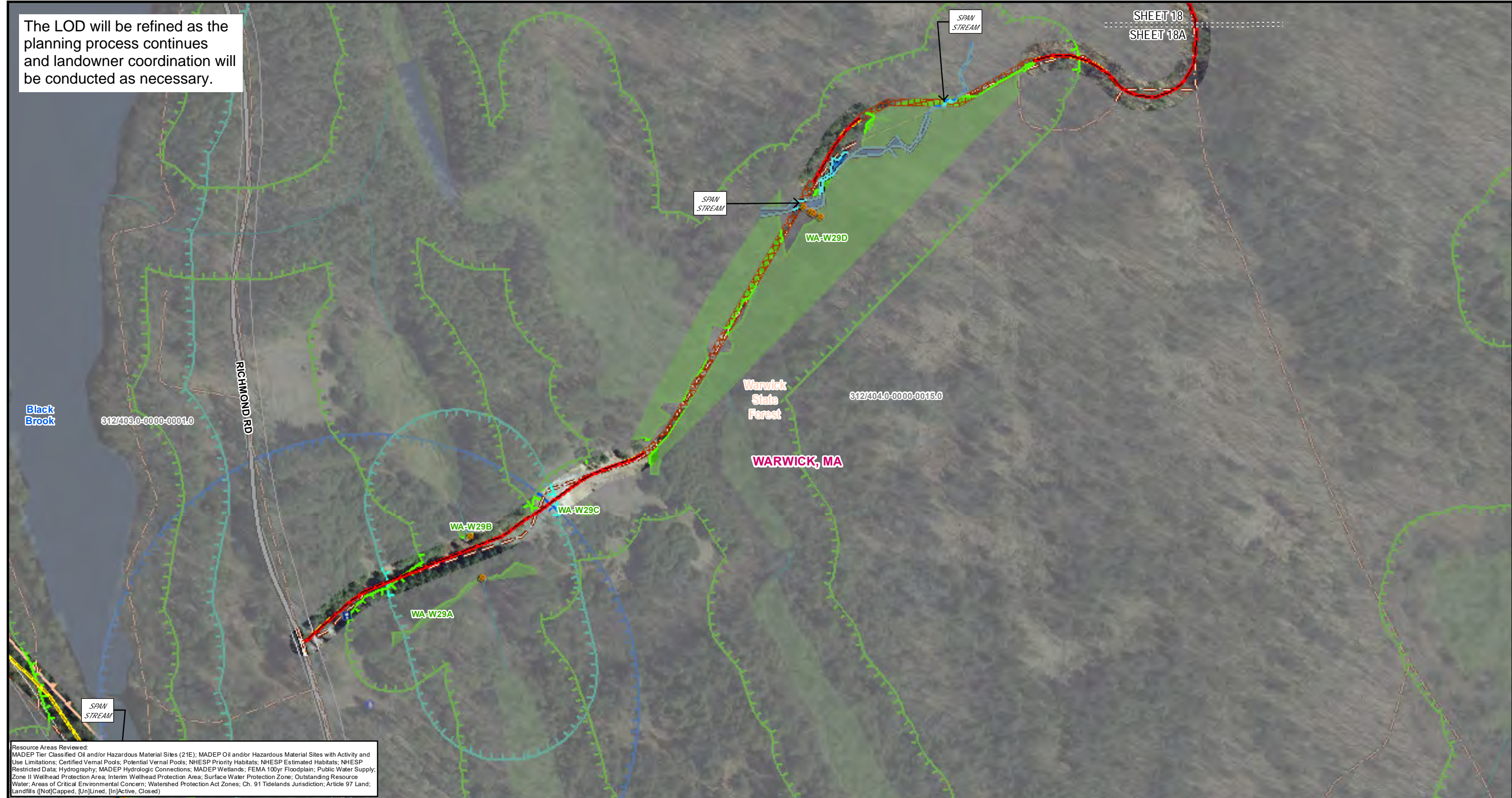
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0 50 100
Feet

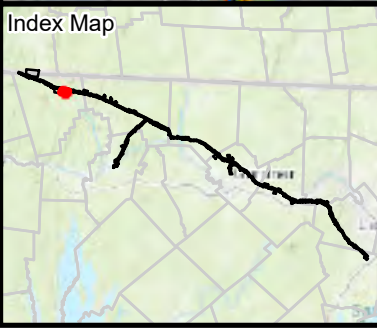
**Indicates Layers Set to Transparency*

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Best Management Practices	Existing Conditions
<ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting 	<ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Edge of ROW
Design	Other
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income
Article 97 Lands	Other
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

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1 inch = 200 feet

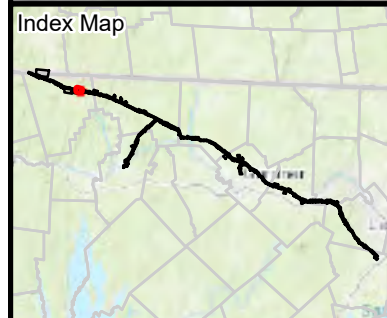
Feet

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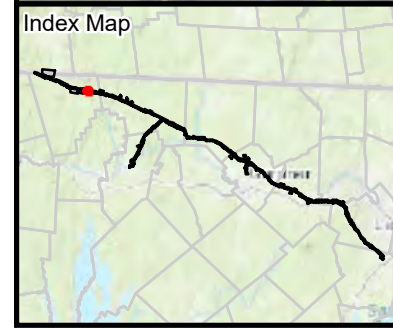
Warwick, MA
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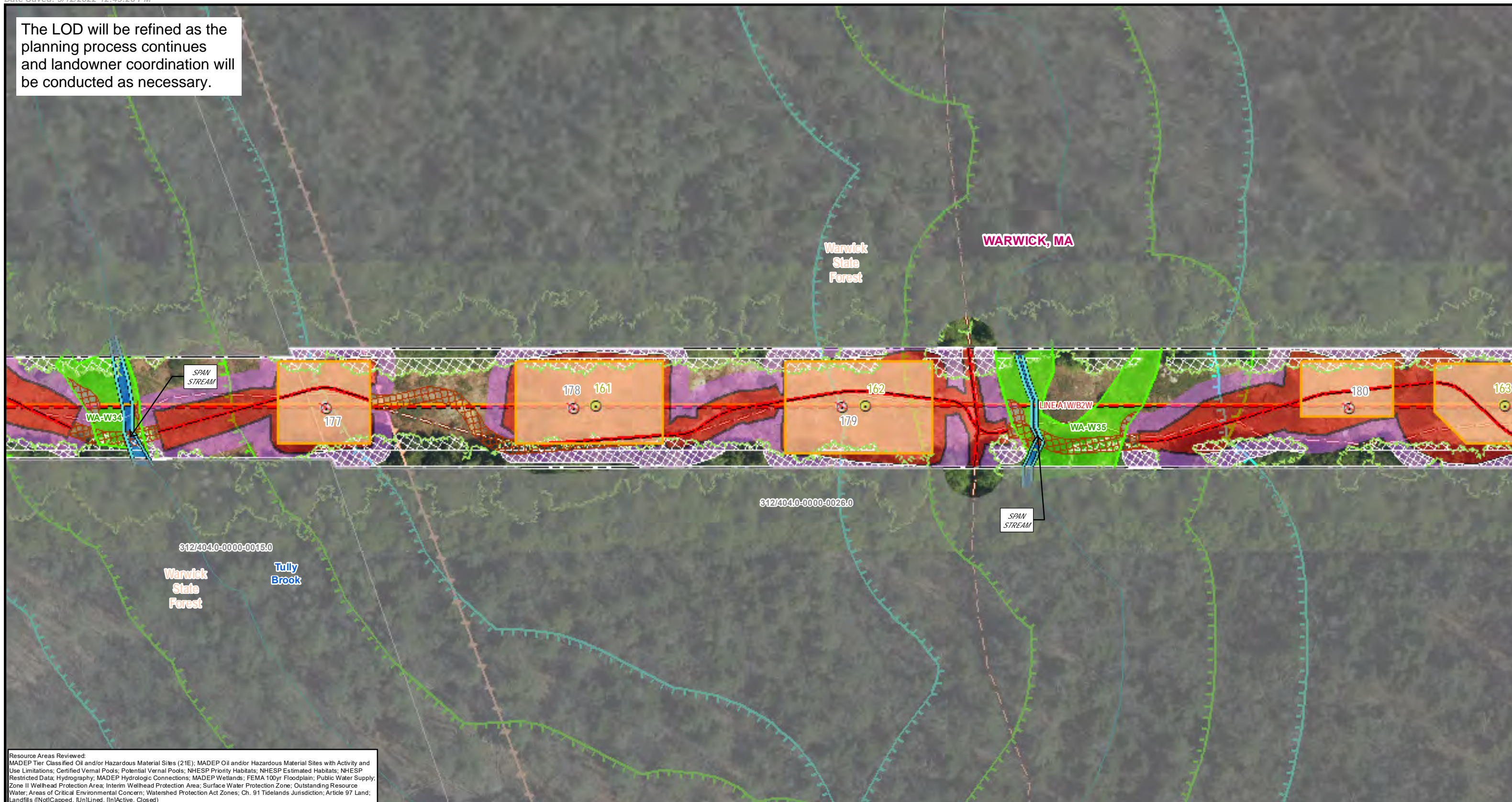
A1/B2 ACR PROJECT

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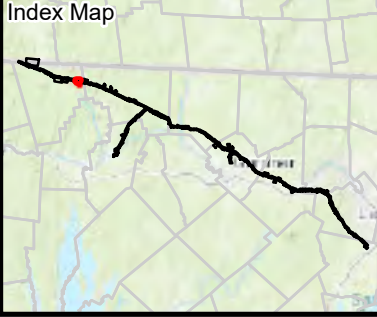
Index Map 	Legend Construction Activities Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2	Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW	Existing Access Existing Tree Line Resource Areas Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*	Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data	Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary	National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income	Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
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Warwick, MA
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Legend	
Construction Activities	Resource Areas
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

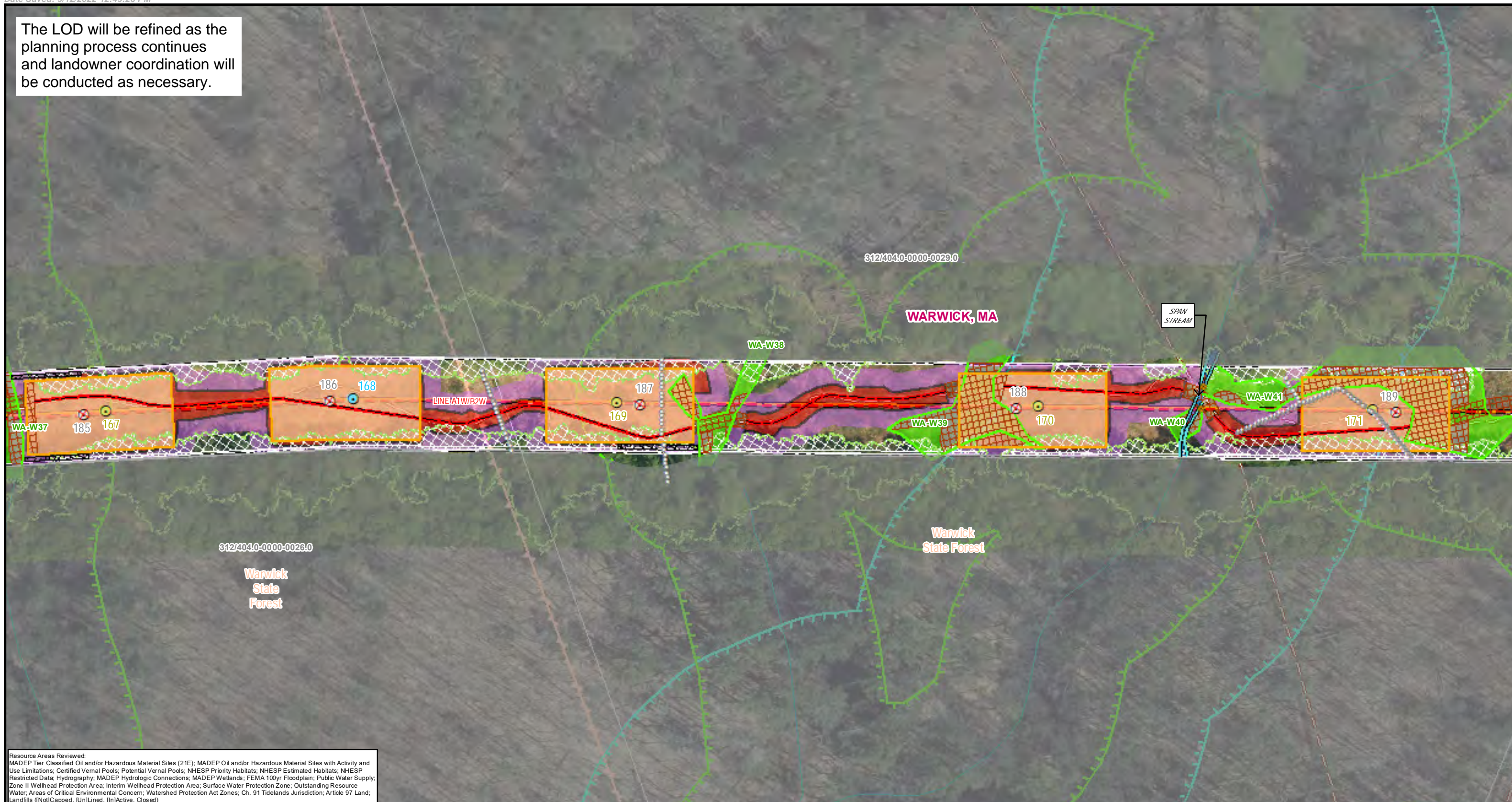
50% Design

September 12, 2022

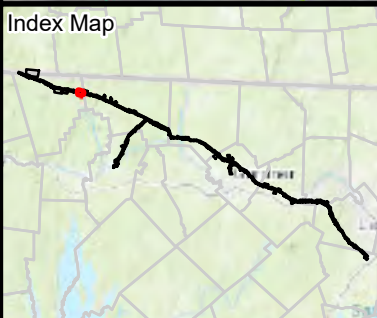
Warwick, MA
Page 22 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend	
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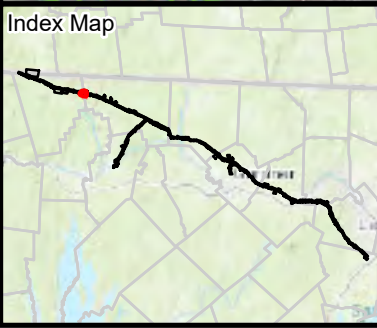
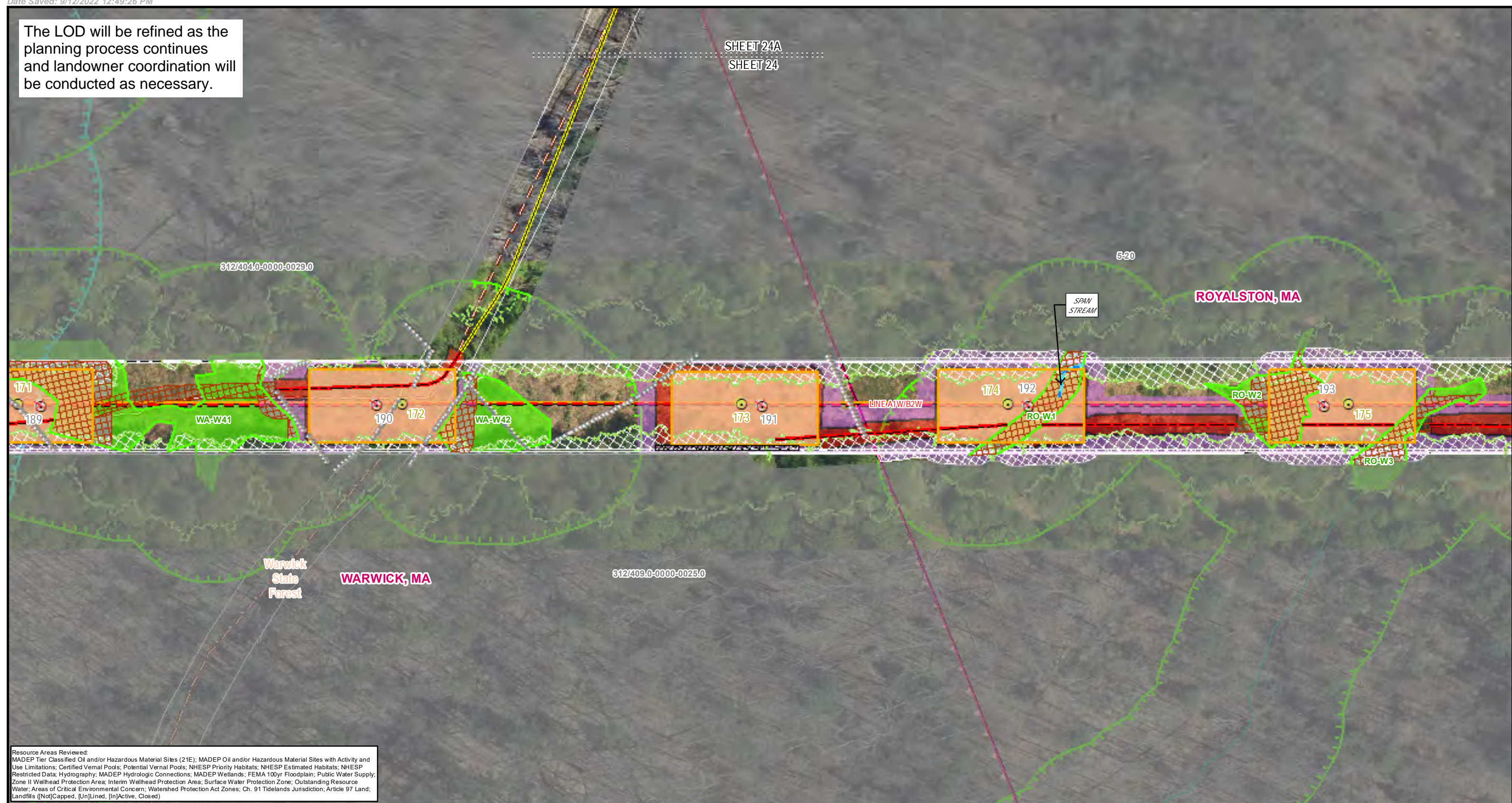
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Figure 2: MEPA General Purpose Plans
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 September 12, 2022

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Figure 2: MEPA General Purpose Plans

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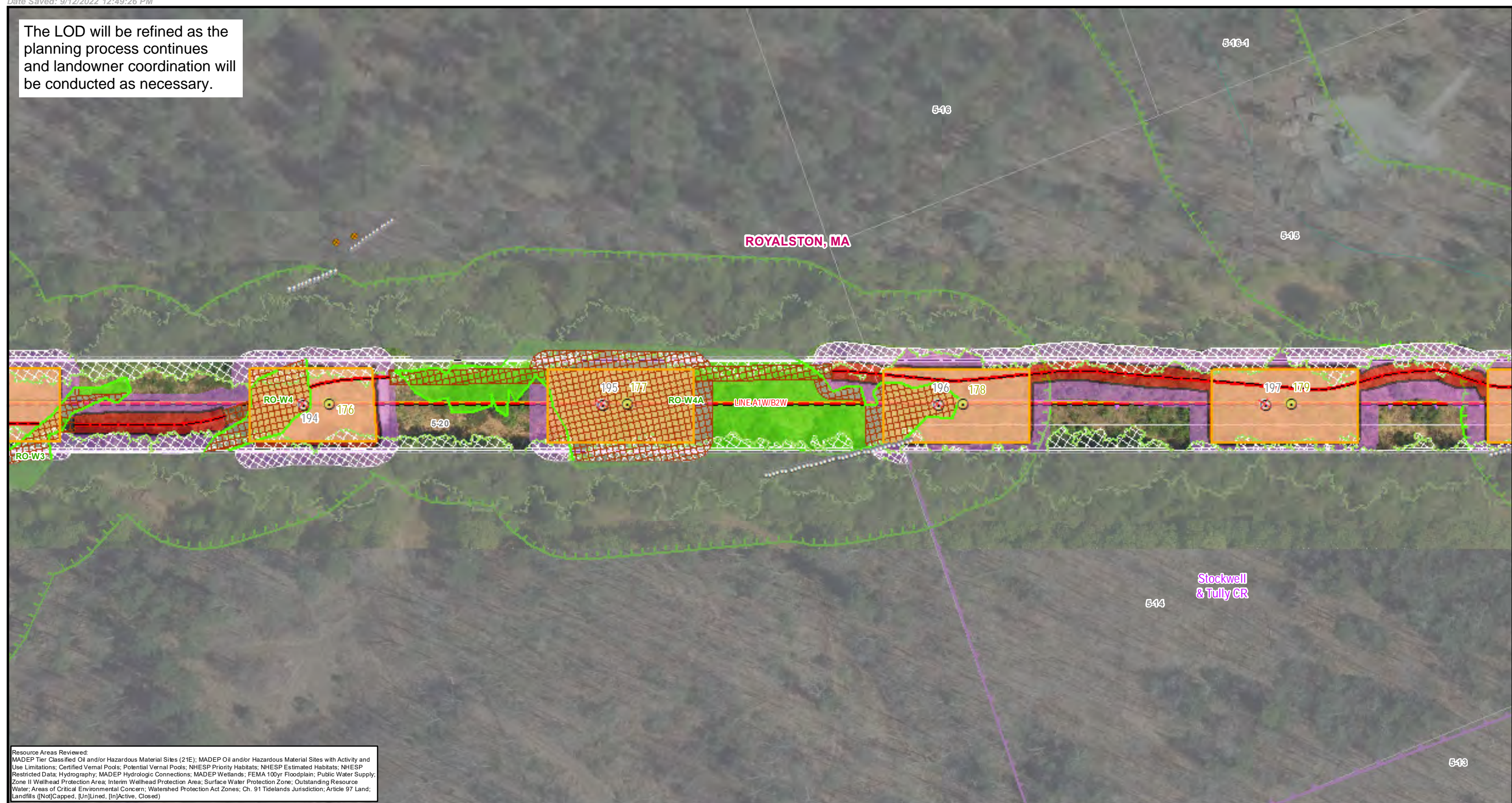
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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1 inch = 150 feet
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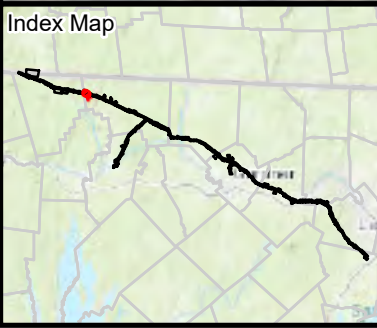
**Indicates Layers Set to Transparency*

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Work Envelope	Existing Access	Approximate Wetland Edge	Minority & Income	Minority
Install Structure (Concrete Caisson)	Pull Pad	Existing Tree Line	Approximate Wetland	Minority	Income
Install Structure (Direct Embed)	Limit of Cut/Fill	Delineated Wetland Edge	State Streams	Income	
Install Structure (Vertical Jumper Switch)	Limit of Disturbance	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Proposed Retaining Wall	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Tree Removal	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Best Management Practices	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Construction Matting	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Existing Conditions	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Structure	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Other Existing Transmission Centerline	Approximate Swale	NHESP Priority & Estimated Habitats		
	Edge of ROW	Delineated Open Water*	NHESP Restricted Data		

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

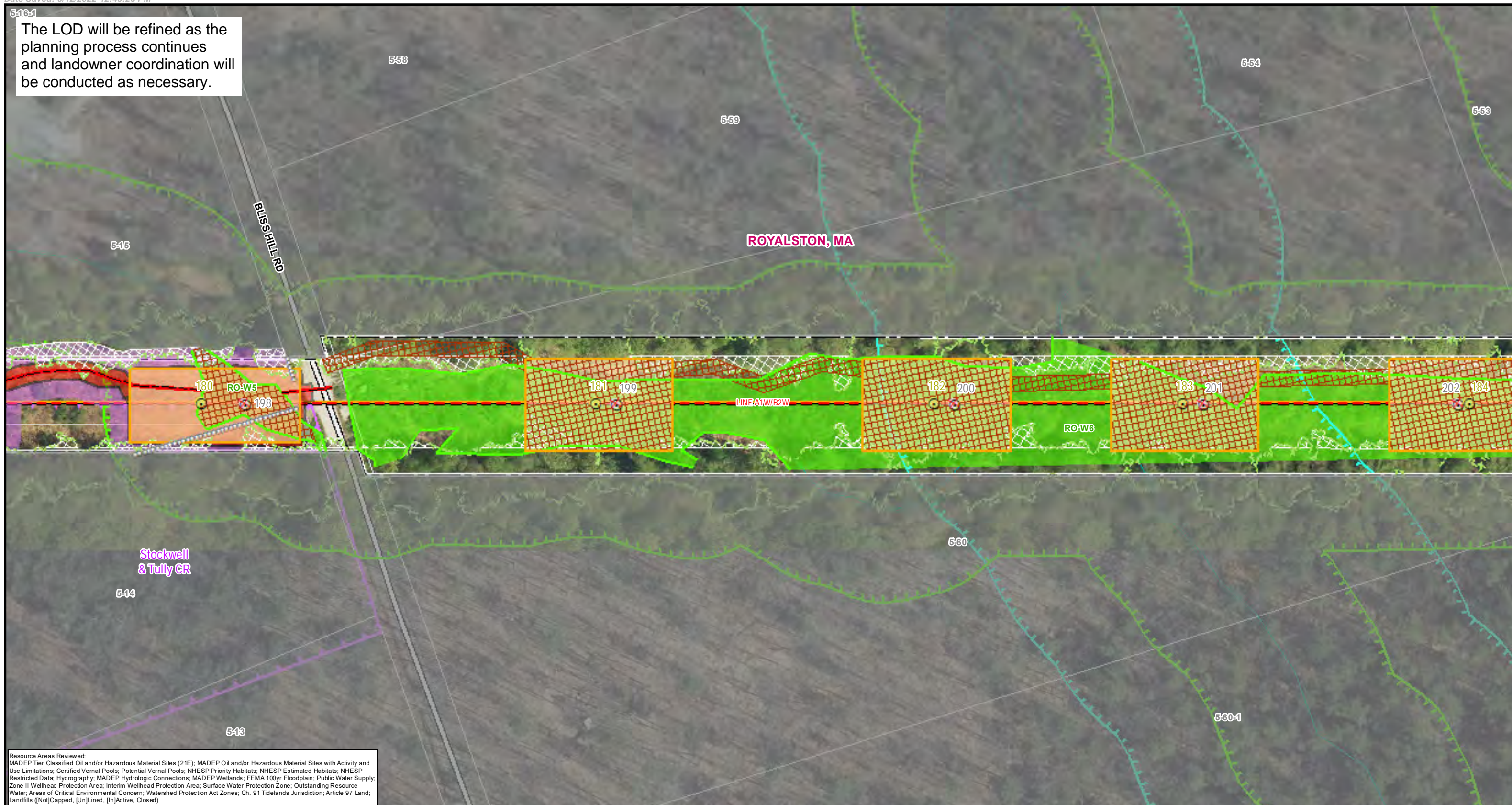
Royalston, MA
Page 25 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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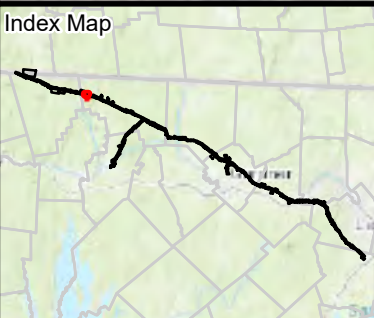
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Scale: 1/8"=1'

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Article 97 Lands	Environmental Justice 2020 Populations
<ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<ul style="list-style-type: none"> Minority & Income Minority Income
Interim Wellhead Protection Area	Other Features
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

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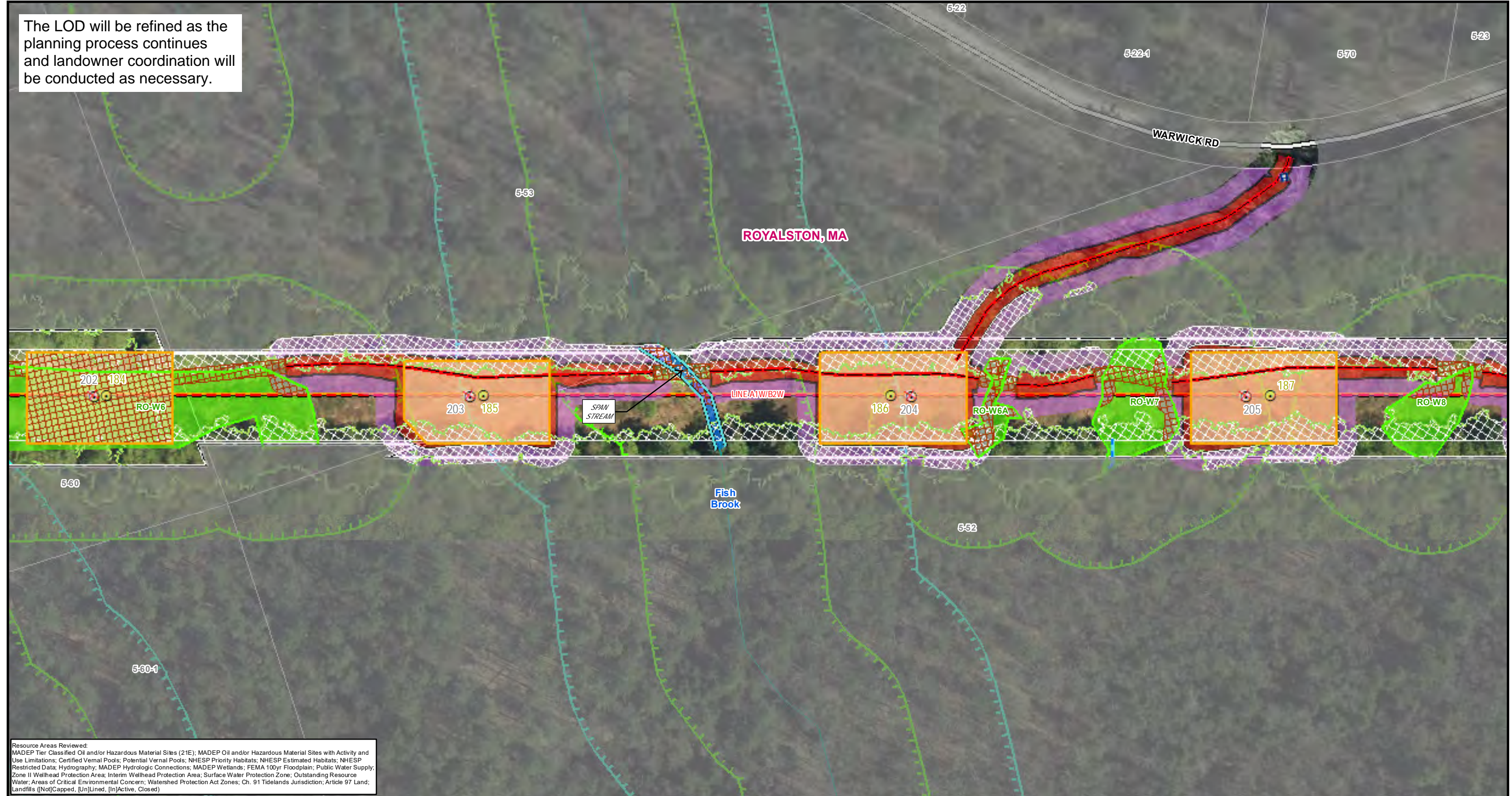
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0 50 100
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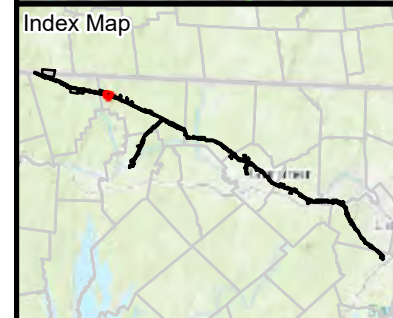
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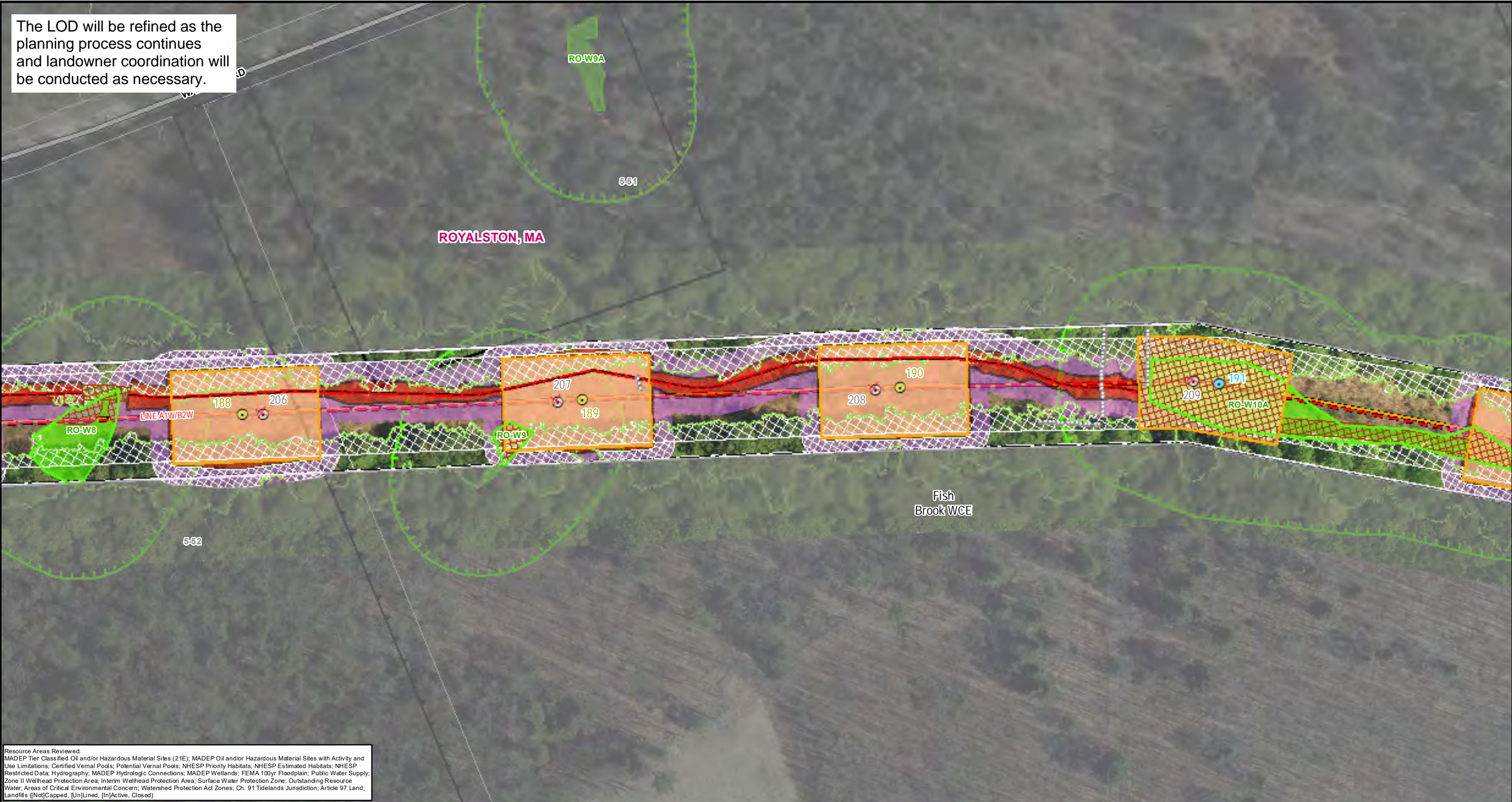
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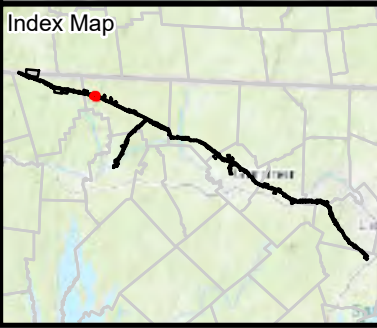
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nationalgrid
 BSC GROUP

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In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	100ft Buffer to Wetlands & Streams	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	200ft Riverfront Area	200ft Riverfront Area		
General Maintenance	Best Management Practices	FEMA 100yr Floodplain*	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Certified Vernal Pools	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Potential Vernal Pools	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	NHESP Priority & Estimated Habitats	NHESP Priority & Estimated Habitats		
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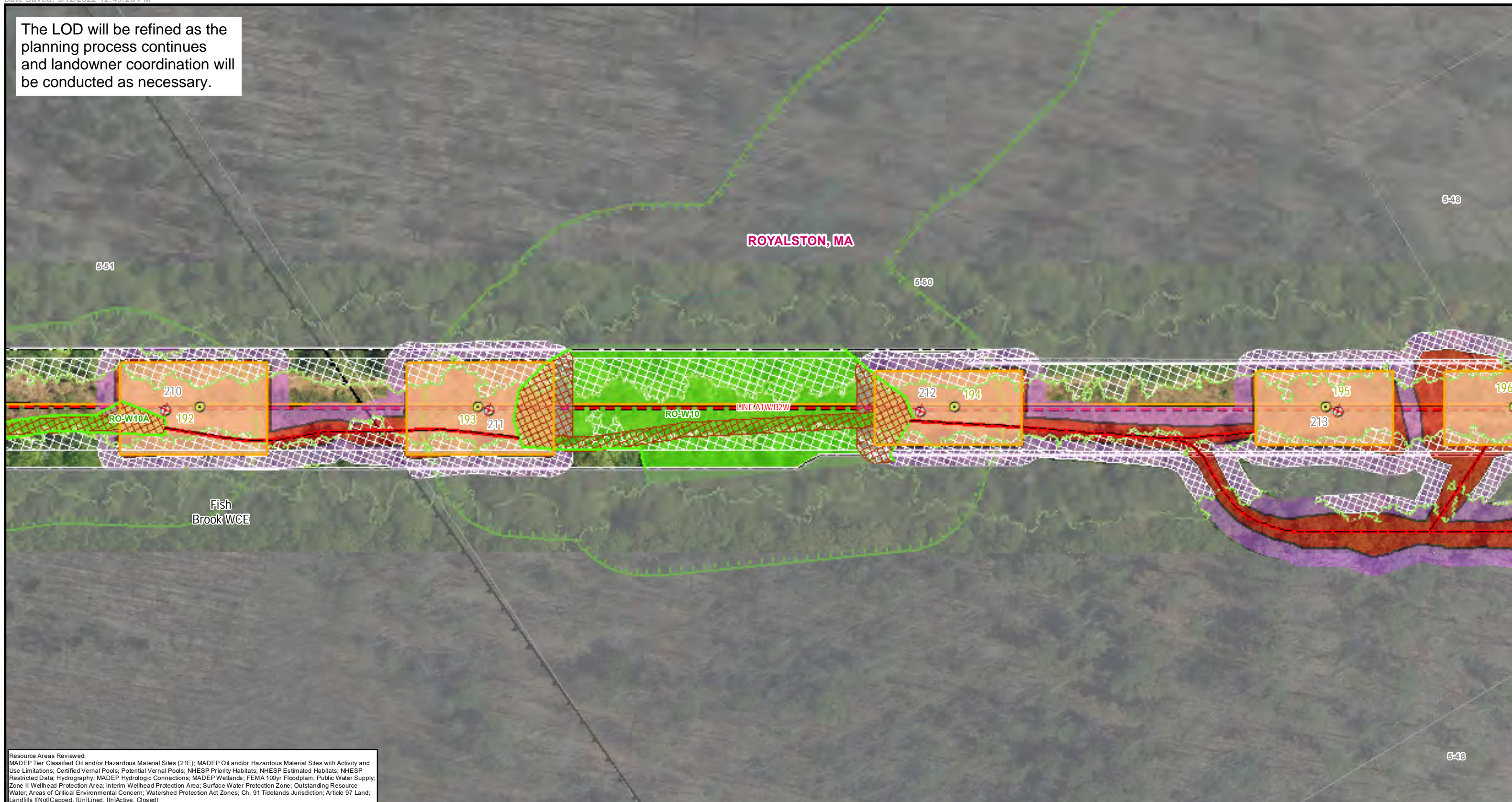
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**Indicates Layers Set to Transparency*

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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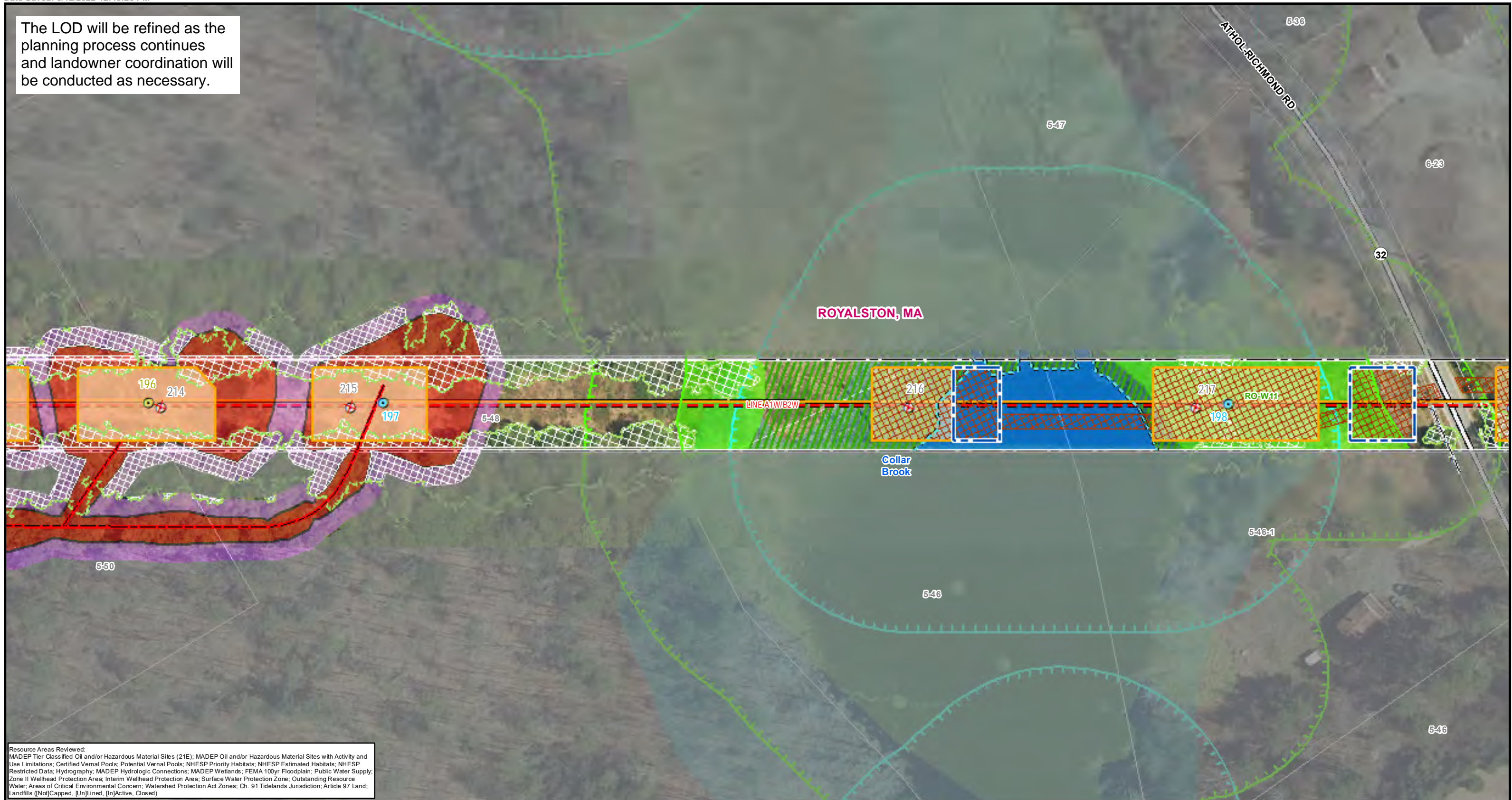
Index Map 	Legend Construction Activities Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2	Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Approximate Swale Edge of ROW	Existing Access Existing Tree Line Resource Areas Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*	Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data	Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary	National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income	Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private
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A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

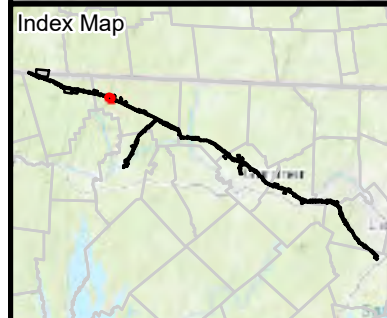
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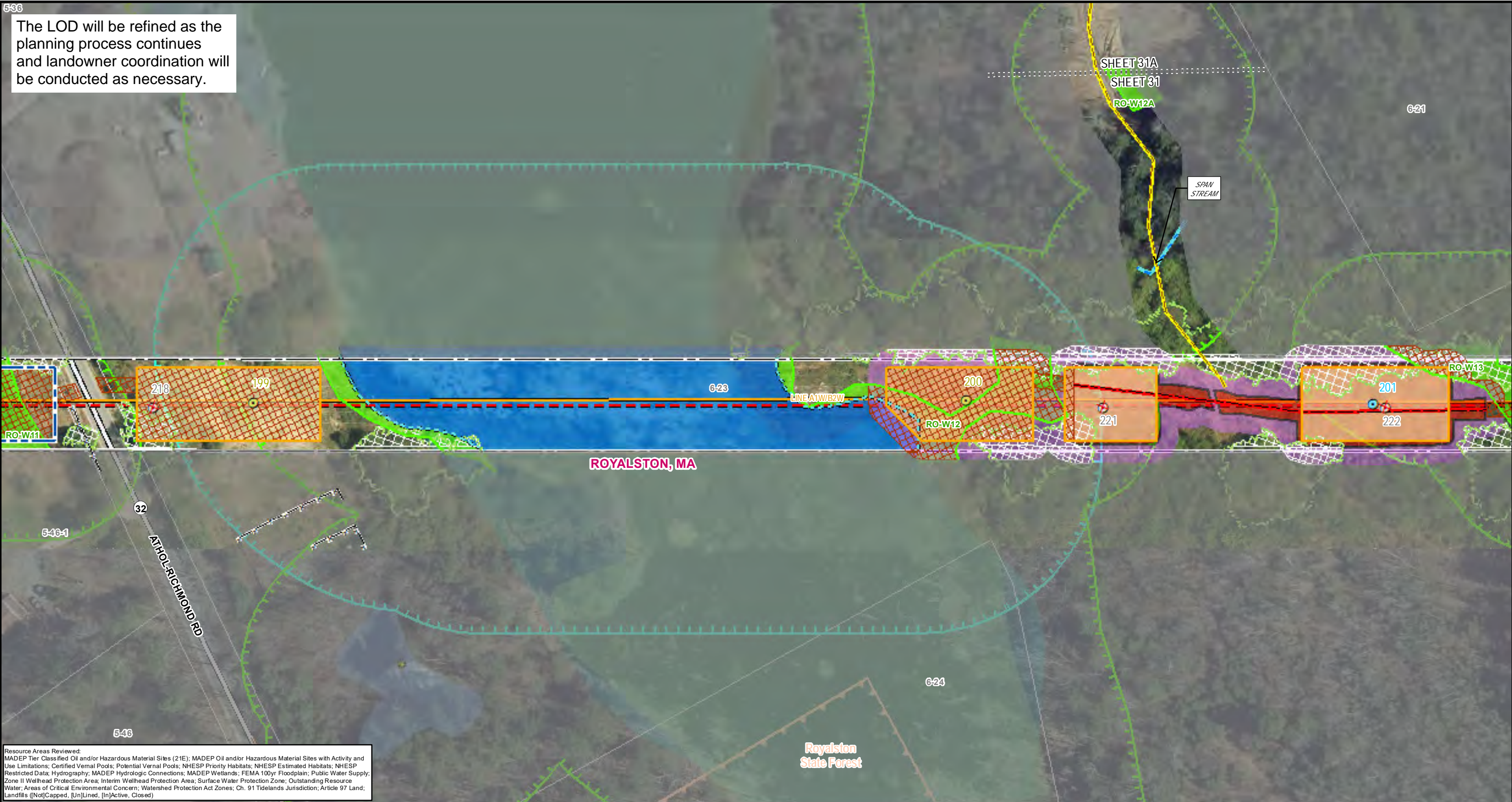
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
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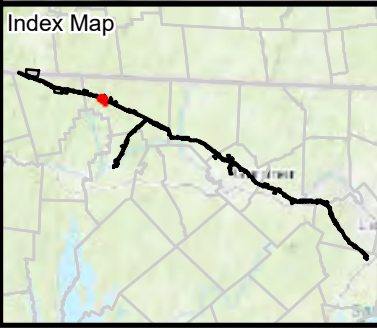
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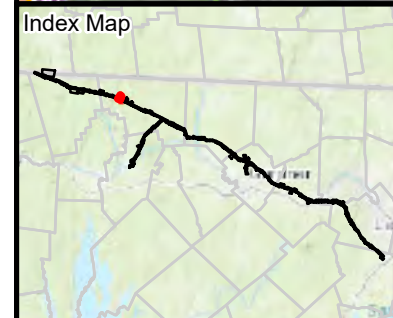
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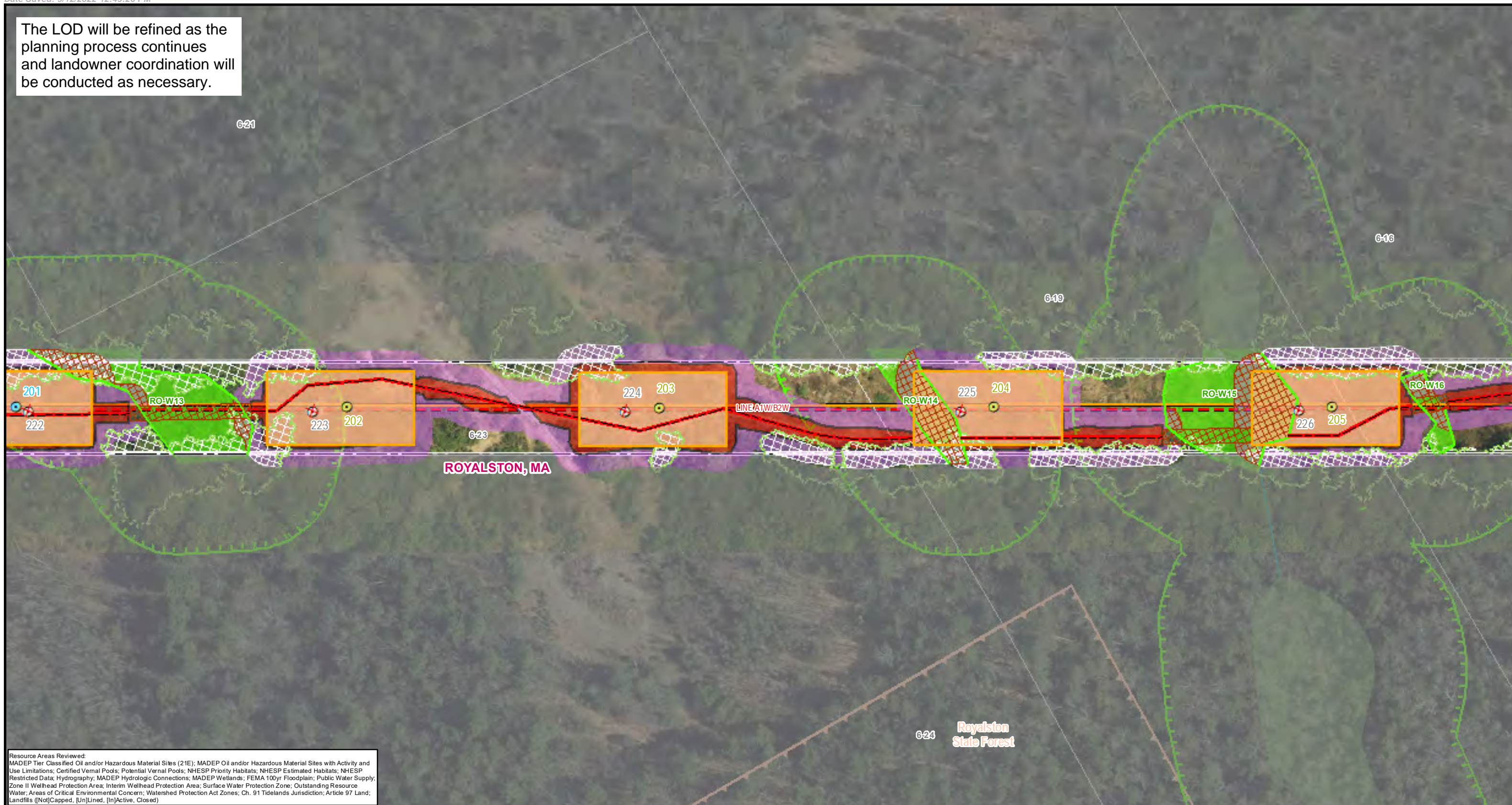
50% Design

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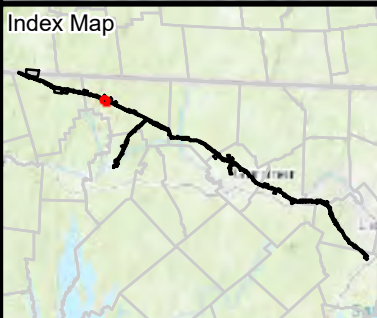
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Legend	
Construction Activities	Existing Access
Remove Structure	Existing Tree Line
Install Structure (Concrete Caisson)	Delineated Wetland Edge
Install Structure (Direct Embed)	Delineated Wetland
Install Structure (Vertical Jumper Switch)	Delineated Vernal Pool Extent*
In Kind Direct Embed Structure Replacement	Delineated Top of Bank
In Kind Structure on Concrete Caisson Replacement	Delineated Stream Centerline
Reuse Structure	Delineated Ordinary High Water
General Maintenance	Approximate Top of Bank
Proposed Centerline	Approximate Ordinary High Water
Remove OH Line	Approximate Swale
Standard Road Type 1 & 2	Delineated Open Water*
Designed Road Type 3-5	Approximate Wetland Edge
Work Envelope	Approximate Wetland
Pull Pad	State Streams
Limit of Cut/Fill	State Wetlands*
Limit of Disturbance	State Open Water*
Proposed Retaining Wall	100ft Buffer to Wetlands & Streams
Proposed Tree Removal	200ft Riverfront Area
Best Management Practices	FEMA 100yr Floodplain*
Construction Matting	Certified Vernal Pools
Existing Conditions	Potential Vernal Pools
Existing Structure	NHESP Priority & Estimated Habitats
Other Existing Transmission Centerline	NHESP Restricted Data
Edge of ROW	Interim Wellhead Protection Area
	Zone II Wellhead Protection Area
	Surface Water Protection Zone
	Outstanding Resource Water
	Public Water Supply
	MADEP (21E) Site
	MADEP AUL Site
	Railroad
	DCR Trails
	Hiking Trails
	Long Distance Trails
	Parcel Boundary
	National Grid Property
	Town Boundary
	State Boundary
	Gate
	Culvert
	Fence
	Stonewall
	Guardrail
	Environmental Justice 2020 Populations
	Minority & Income
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	Income

A1/B2 ACR PROJECT

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1 inch = 100 feet
 0 50 100
 Feet

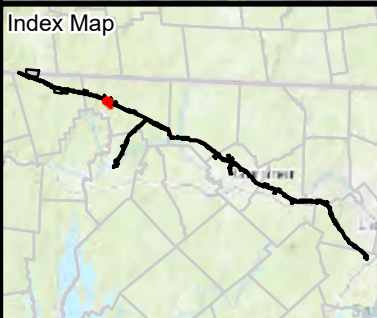
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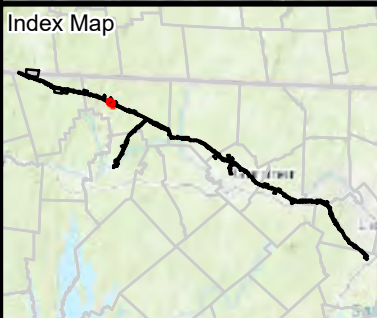
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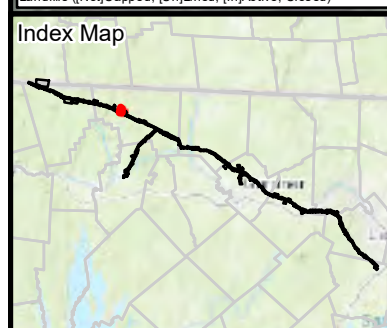
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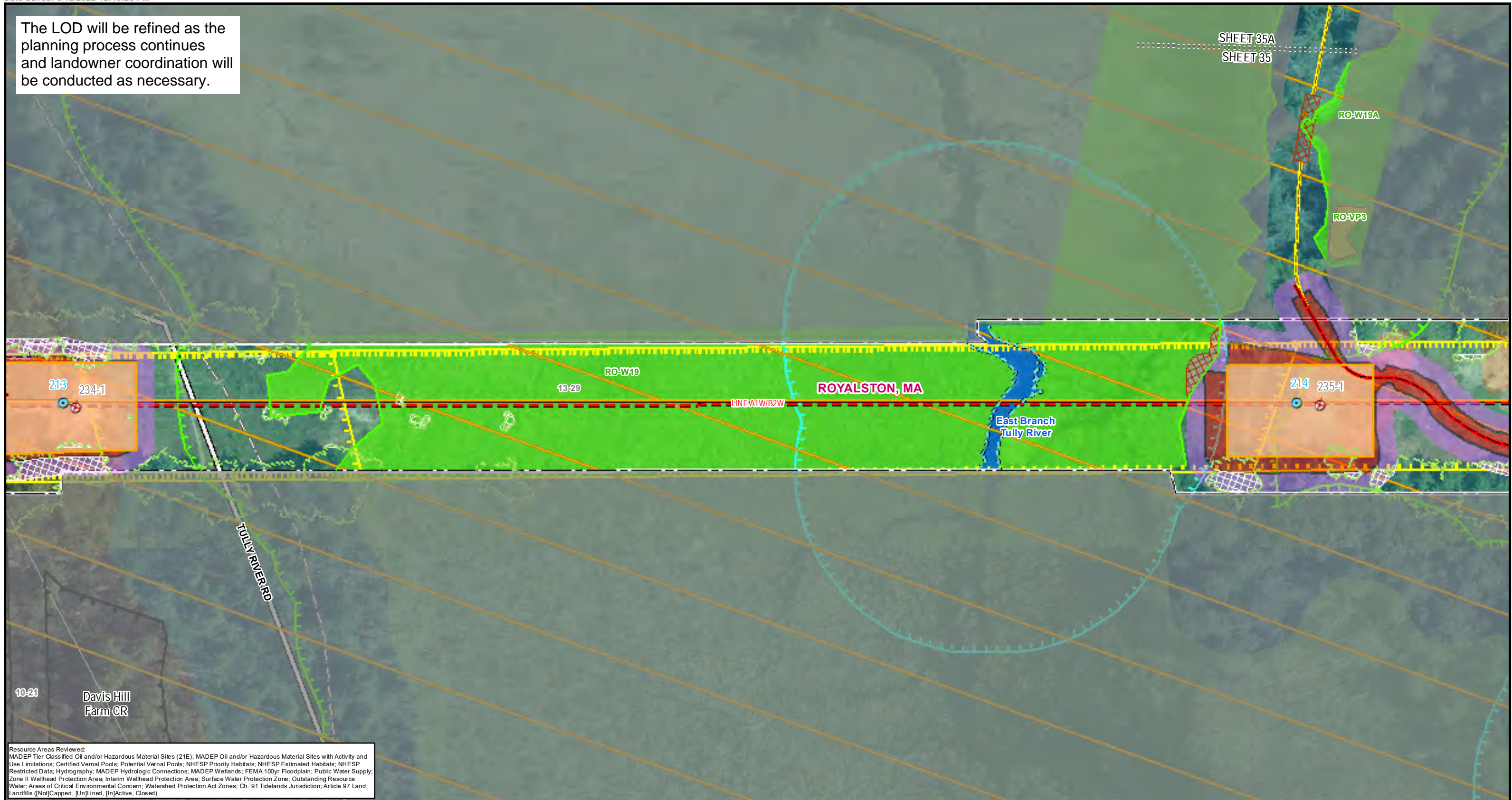
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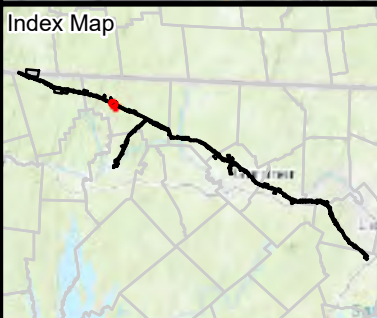
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

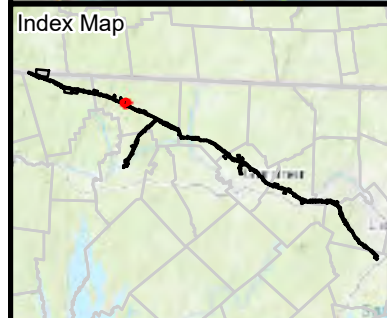
Royalston, MA
Page 35 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend	
Construction Activities	Existing Access
Remove Structure	Existing Tree Line
Install Structure (Concrete Caisson)	Delineated Wetland Edge
Install Structure (Direct Embed)	Delineated Wetland
Install Structure (Vertical Jumper Switch)	Delineated Vernal Pool Extent*
In Kind Direct Embed Structure Replacement	Delineated Top of Bank
In Kind Structure on Concrete Caisson Replacement	Delineated Stream Centerline
Reuse Structure	Delineated Ordinary High Water
General Maintenance	Approximate Top of Bank
Proposed Centerline	Approximate Ordinary High Water
Remove OH Line	Approximate Swale
Standard Road Type 1 & 2	Delineated Open Water*
Designed Road Type 3-5	Approximate Wetland Edge
Work Envelope	Approximate Wetland
Pull Pad	State Streams
Limit of Cut/Fill	State Wetlands*
Limit of Disturbance	State Open Water*
Proposed Retaining Wall	100ft Buffer to Wetlands & Streams
Proposed Tree Removal	200ft Riverfront Area
Best Management Practices	FEMA 100yr Floodplain*
Construction Matting	Certified Vernal Pools
Existing Conditions	Potential Vernal Pools
Existing Structure	NHESP Priority & Estimated Habitats
Other Existing Transmission Centerline	NHESP Restricted Data
Edge of ROW	Delineated Open Water*
Interim Wellhead Protection Area	National Grid Property
Zone II Wellhead Protection Area	Town Boundary
Surface Water Protection Zone	State Boundary
Outstanding Resource Water	Gate
Public Water Supply	Culvert
MADEP (21E) Site	Fence
MADEP AUL Site	Stonewall
Railroad	Guardrail
DCR Trails	Environmental Justice 2020 Populations
Hiking Trails	Minority & Income
Long Distance Trails	Minority
Parcel Boundary	Income

A1/B2 ACR PROJECT

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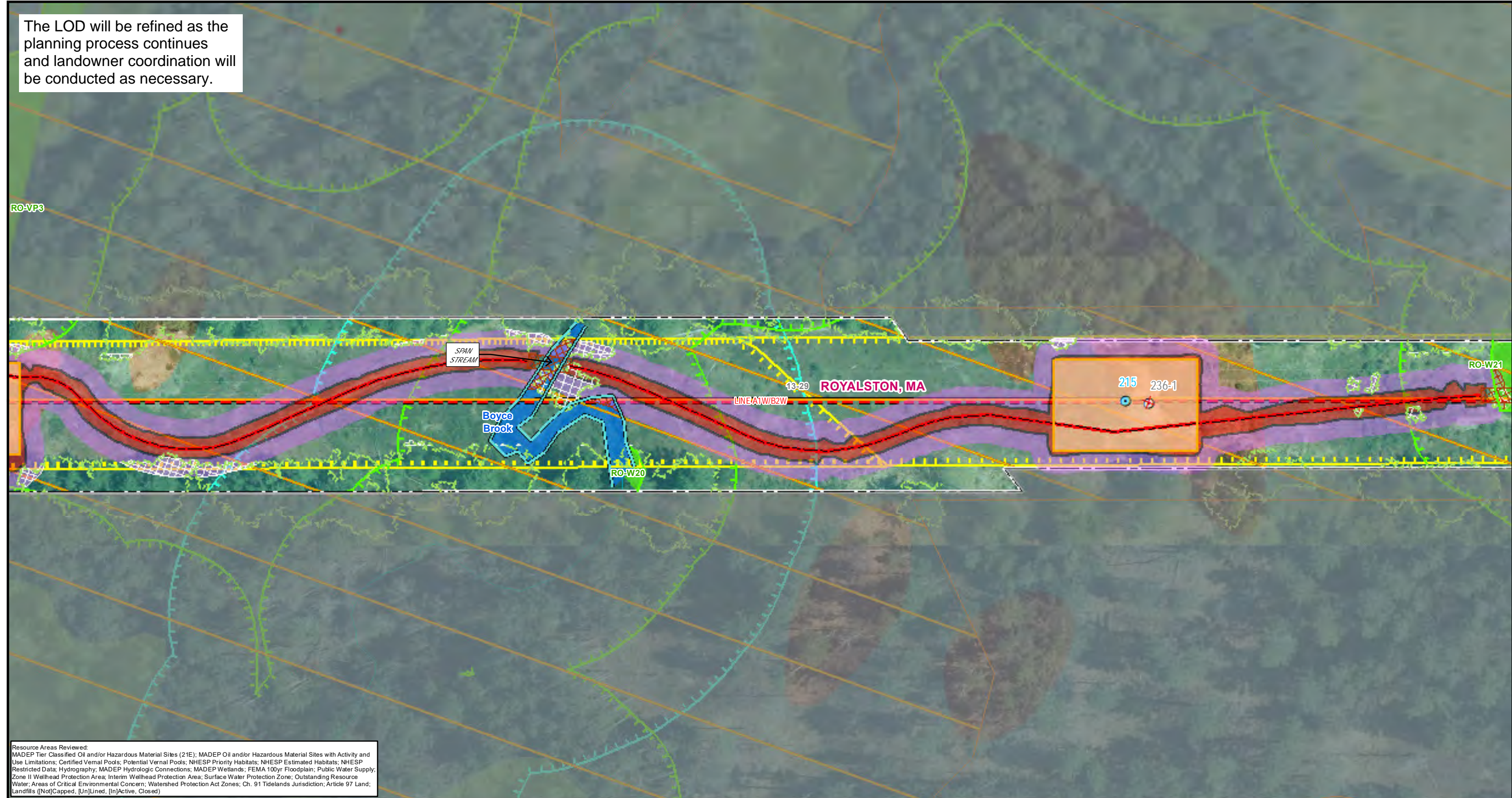
September 12, 2022

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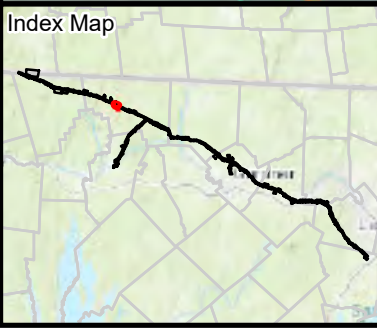
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A1/B2 ACR PROJECT

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September 12, 2022

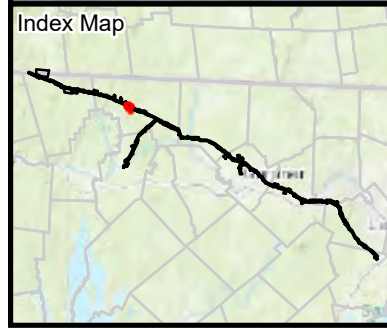
Royalston, MA
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A1/B2 ACR PROJECT

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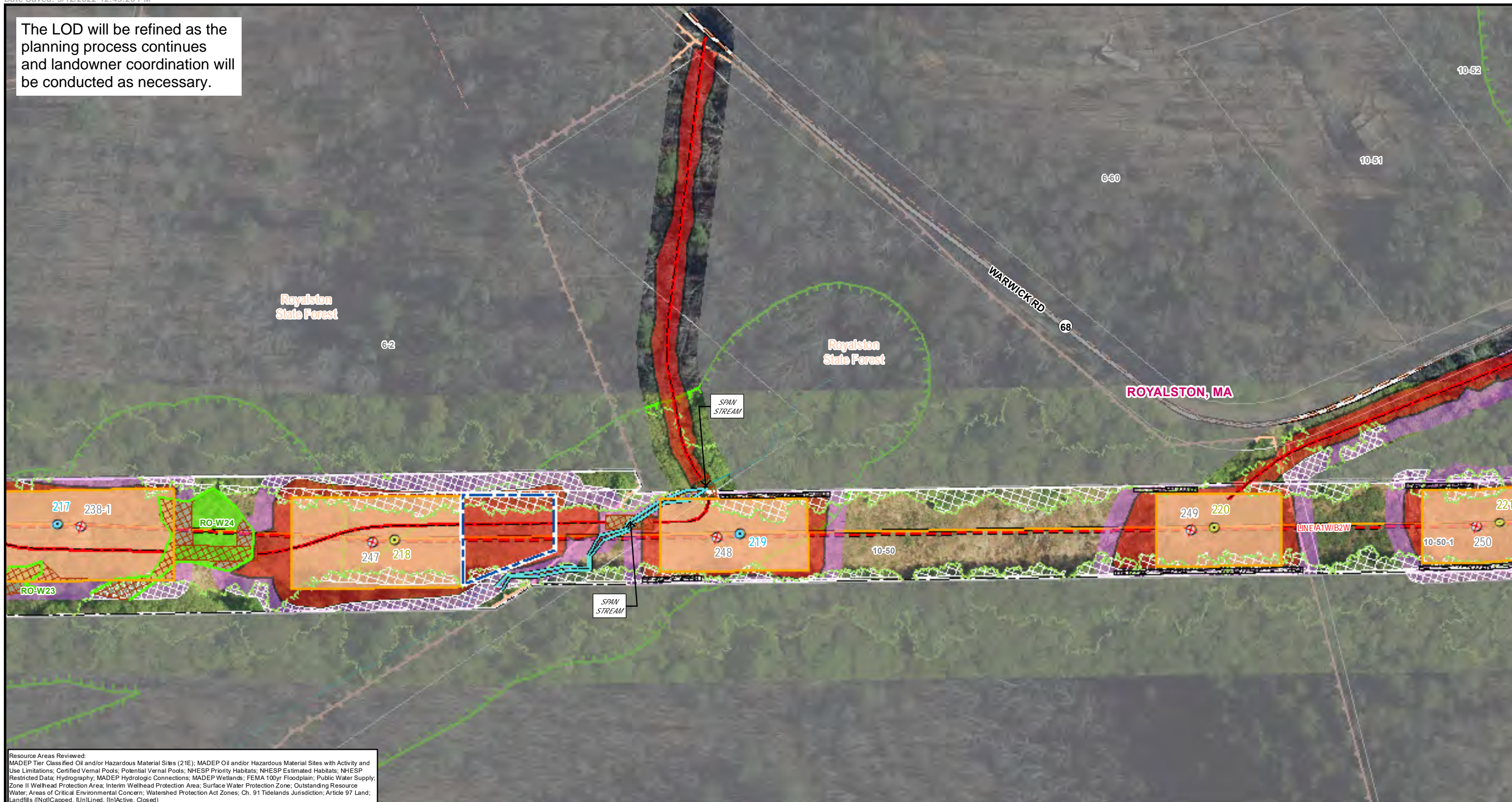
50% Design

September 12, 2022

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Index Map

<p>Construction Activities</p> <ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<p>Best Management Practices</p> <ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting Edge of ROW 	<p>Resource Areas</p> <ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* 	<p>Approximate Wetland Edge</p> <ul style="list-style-type: none"> Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data 	<p>Interim Wellhead Protection Area</p> <ul style="list-style-type: none"> Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<p>National Grid Property</p> <ul style="list-style-type: none"> Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income 	<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private
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Feet

**Indicates Layers Set to Transparency*

A1/B2 ACR PROJECT

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September 12, 2022

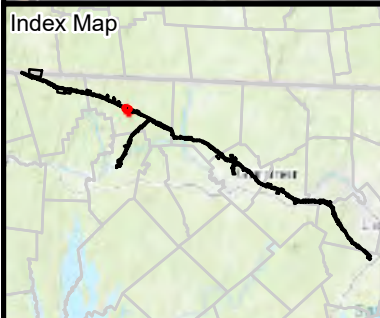
Royalston, MA
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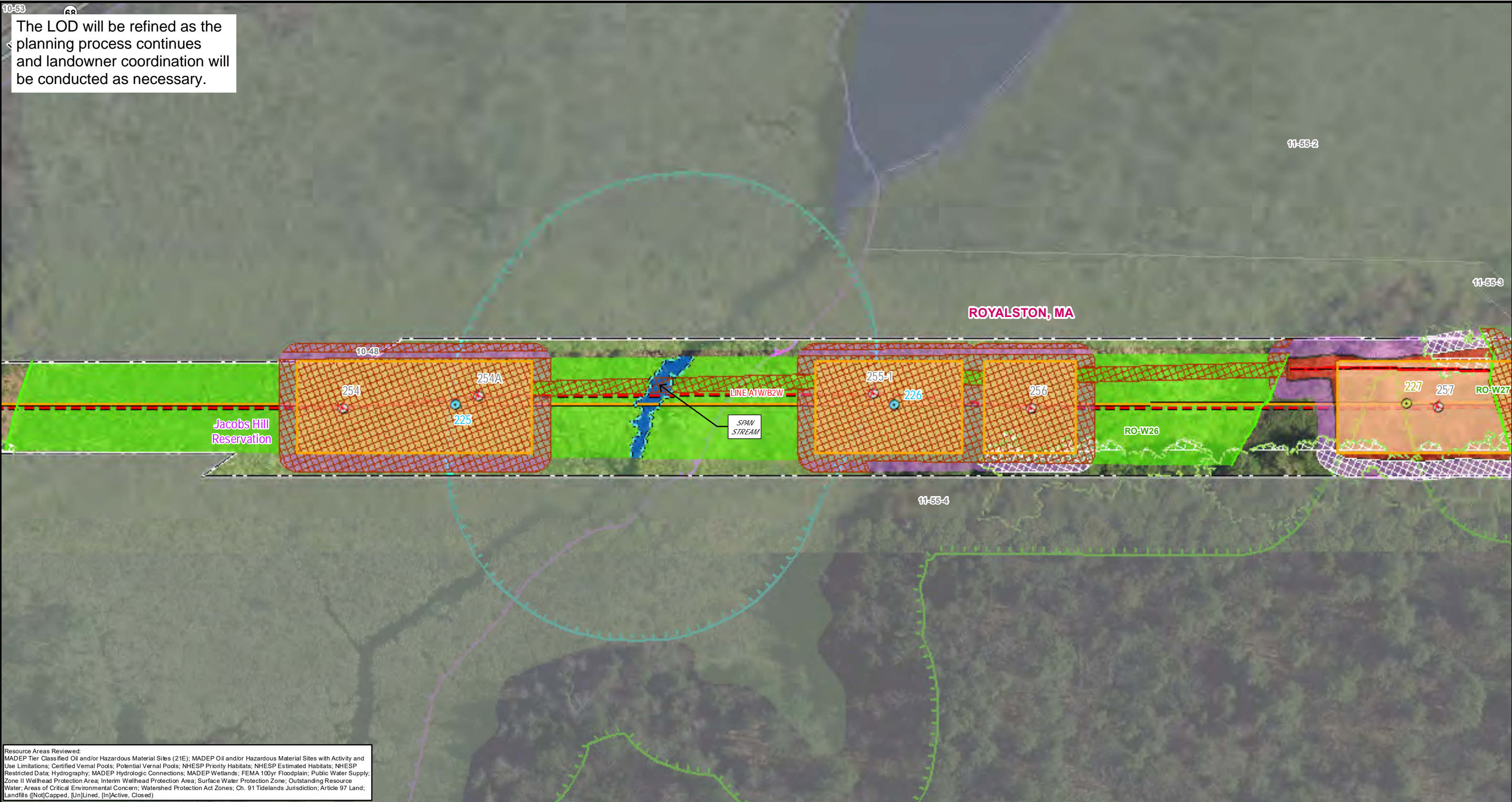
Construction Activities		Resource Areas		Existing Conditions		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Proposed Centerline	Existing Structure	National Grid Property	DCR-State Parks & Recreation
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Remove OH Line	Other Existing Transmission Centerline	Town Boundary	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Standard Road Type 1 & 2	Edge of ROW	State Boundary	Land Trust
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*			Gate	Municipal
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*			Culvert	Private
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams			Fence	
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area			Stonewall	
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*			Guardrail	
	Construction Matting	Approximate Top of Bank	Certified Vernal Pools				
	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools				
		Approximate Swale	NHESP Priority & Estimated Habitats				
		Delineated Open Water*	NHESP Restricted Data				

A1/B2 ACR PROJECT

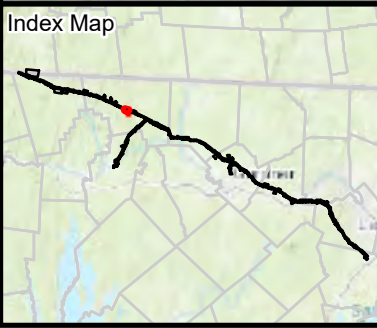
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Royalston, MA
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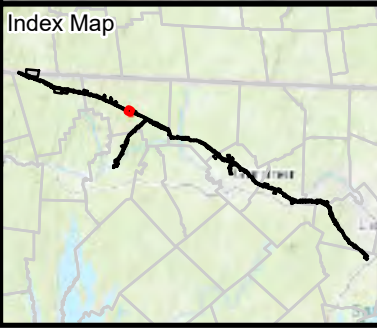
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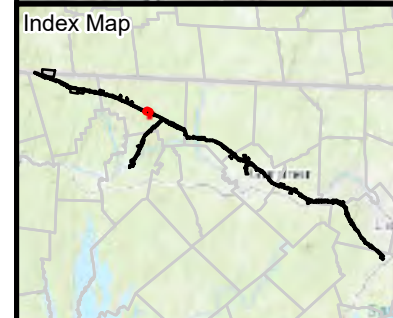
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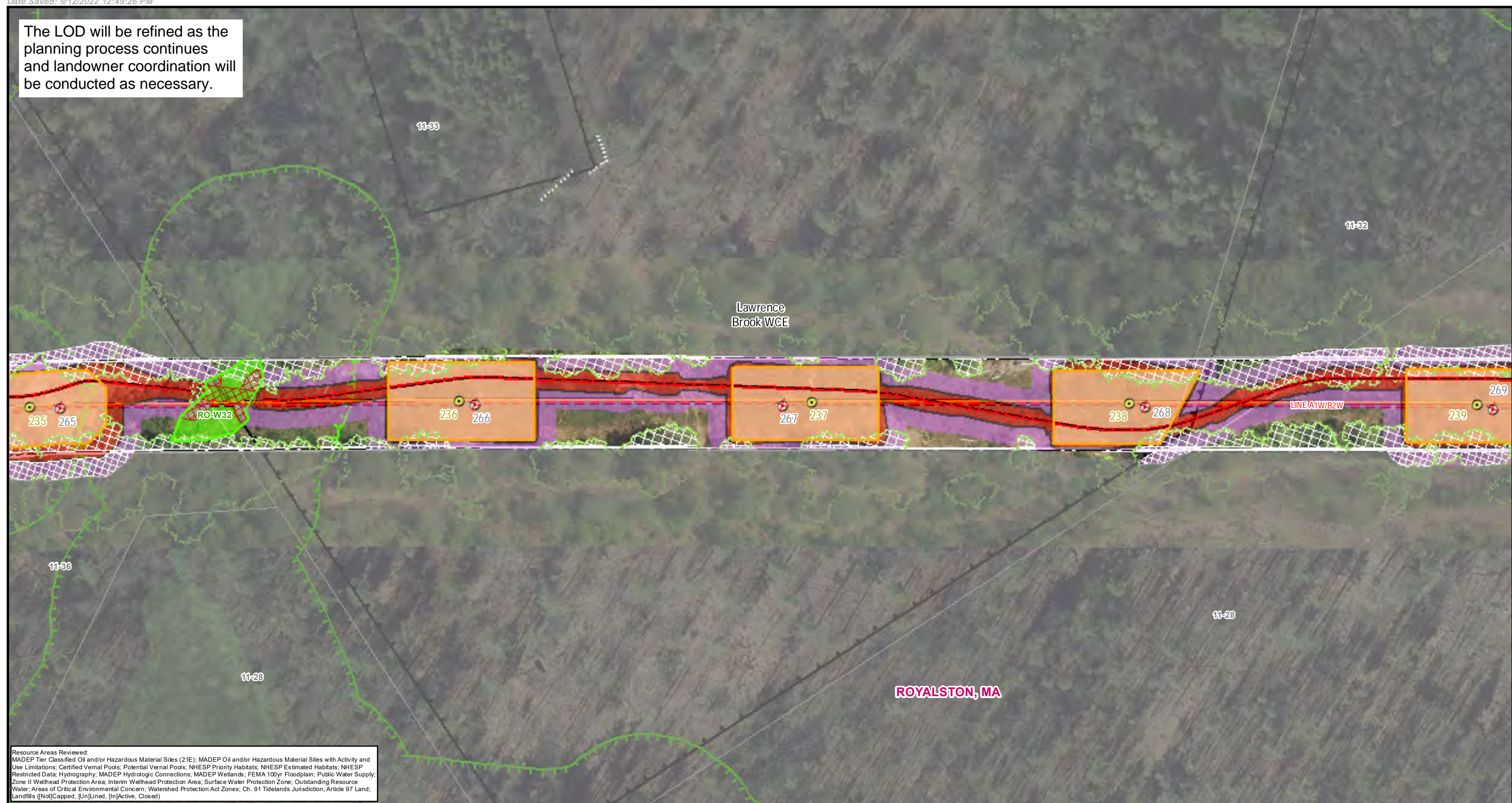
50% Design

September 12, 2022

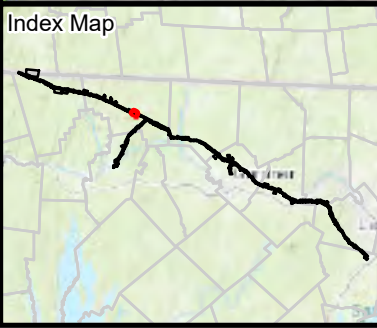
Royalston, MA
Page 42 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend	
Construction Activities	Resource Areas
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<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Approximate Swale Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

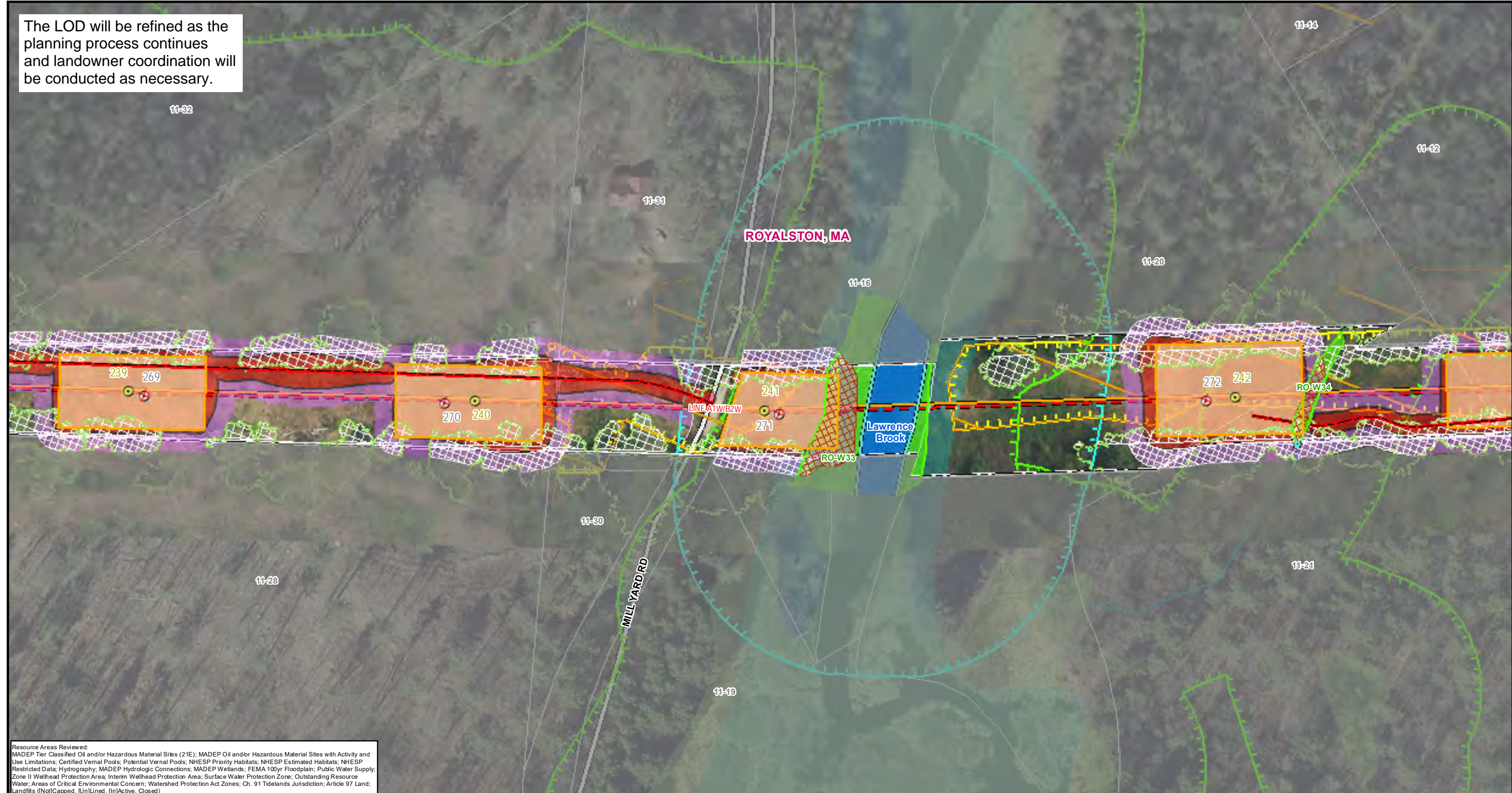
September 12, 2022

Royalston, MA
Page 43 of 168

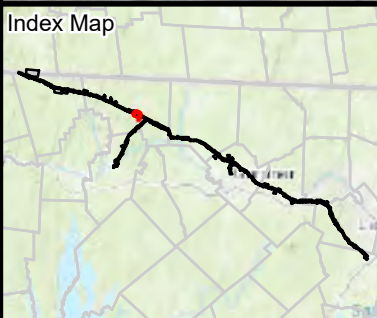
**Indicates Layers Set to Transparency*

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

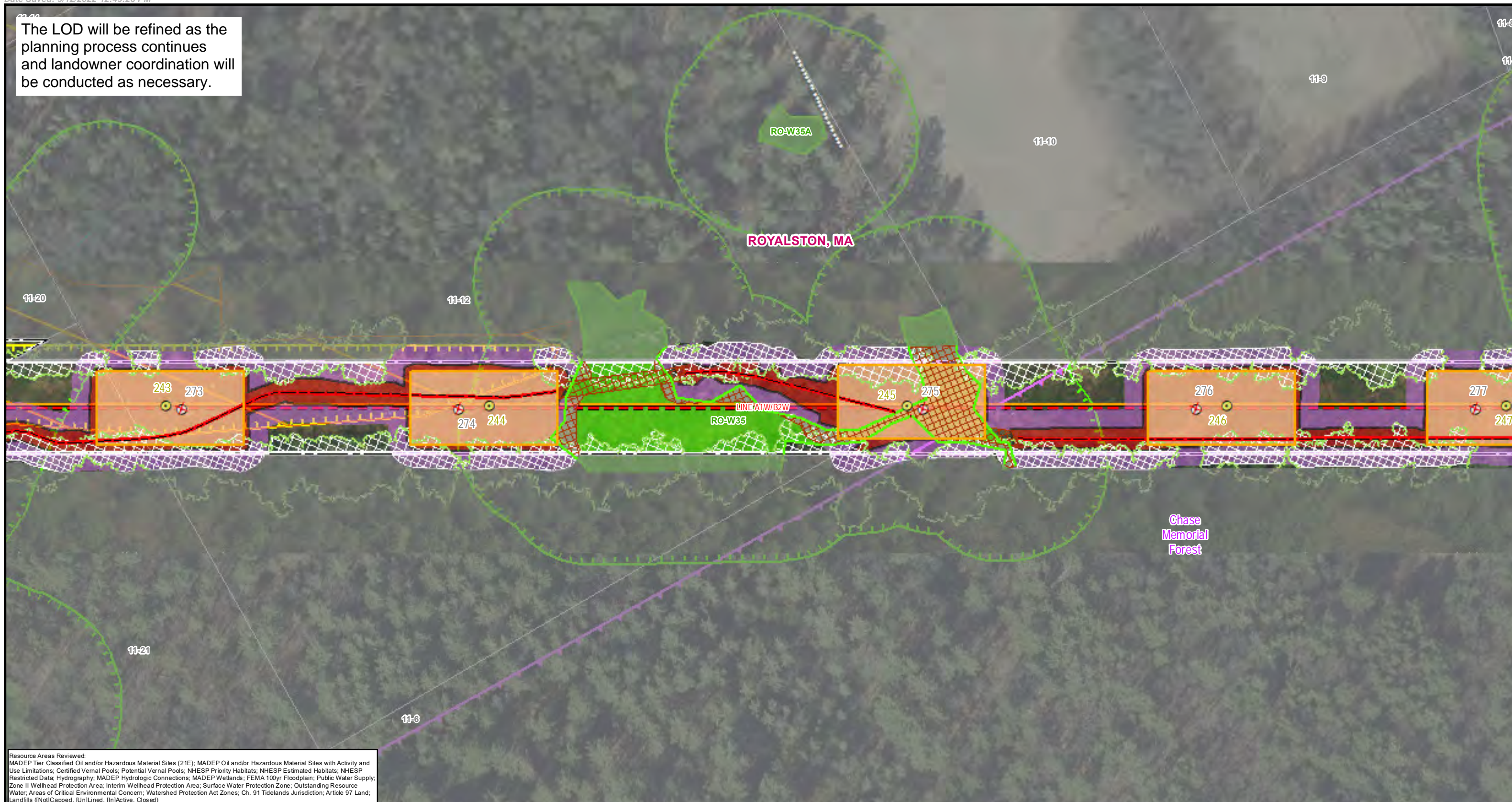
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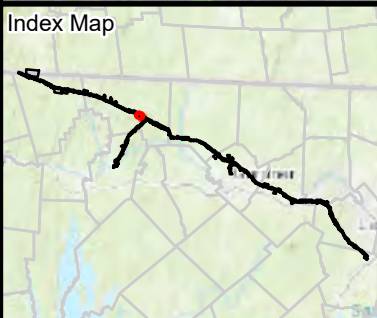
Royalston, MA
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

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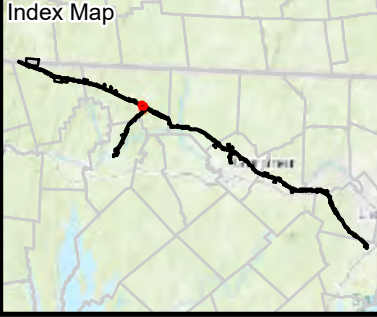
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A1/B2 ACR PROJECT

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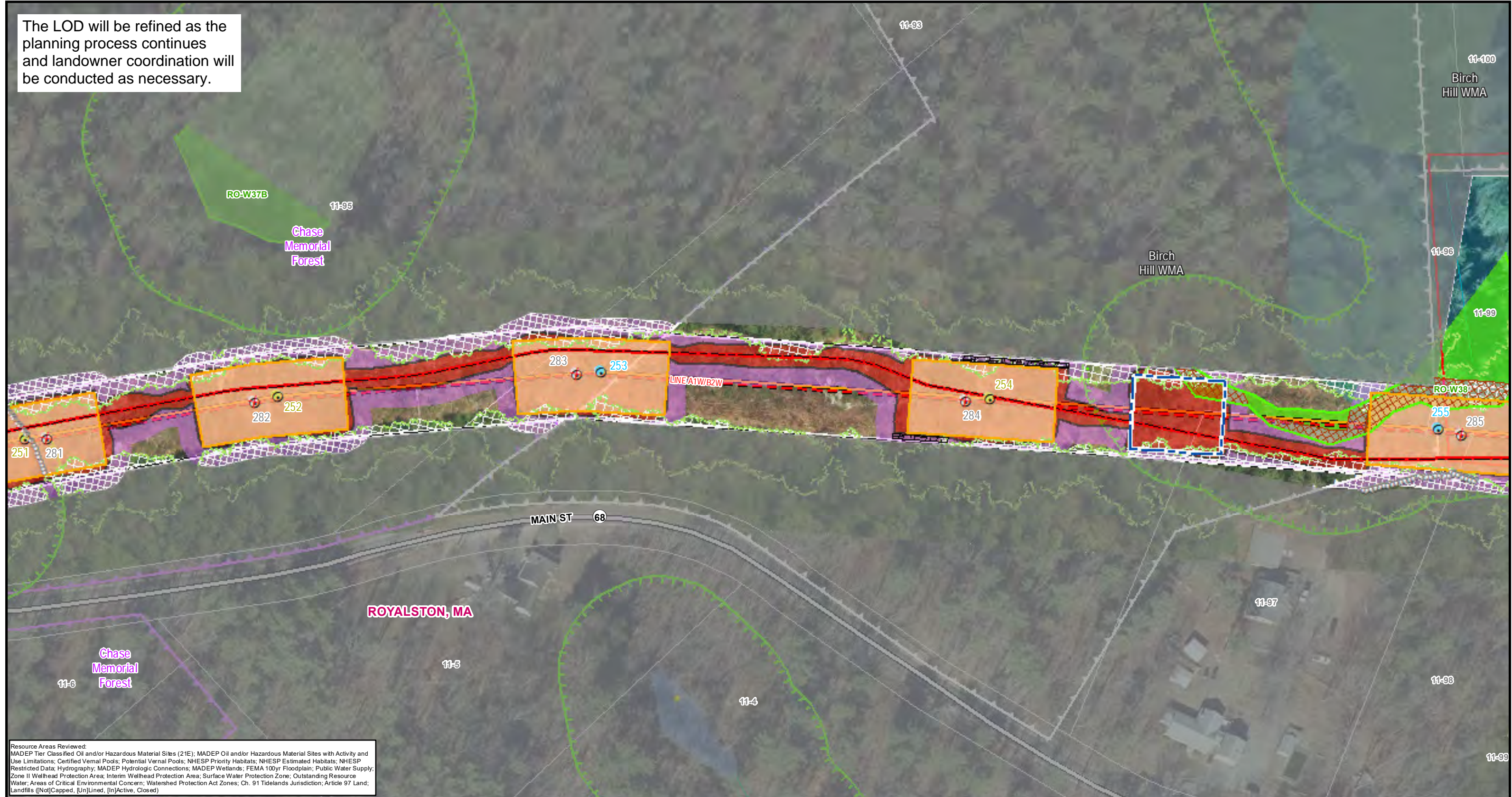
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September 12, 2022

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Page 46 of 168

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Index Map

Legend

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A1/B2 ACR PROJECT

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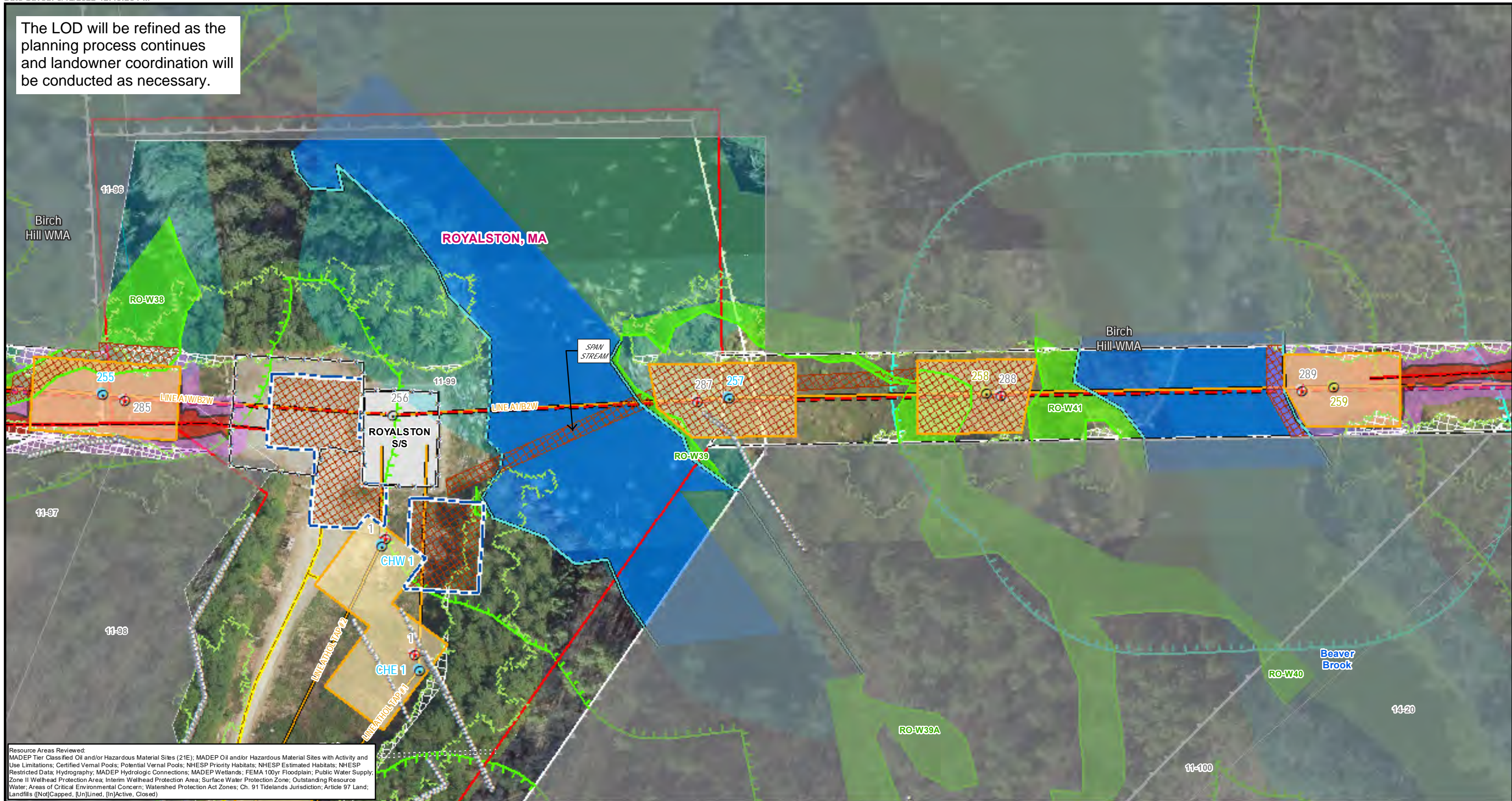
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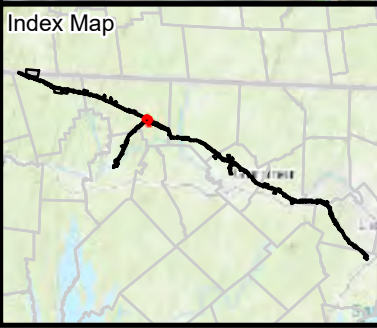
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A1/B2 ACR PROJECT

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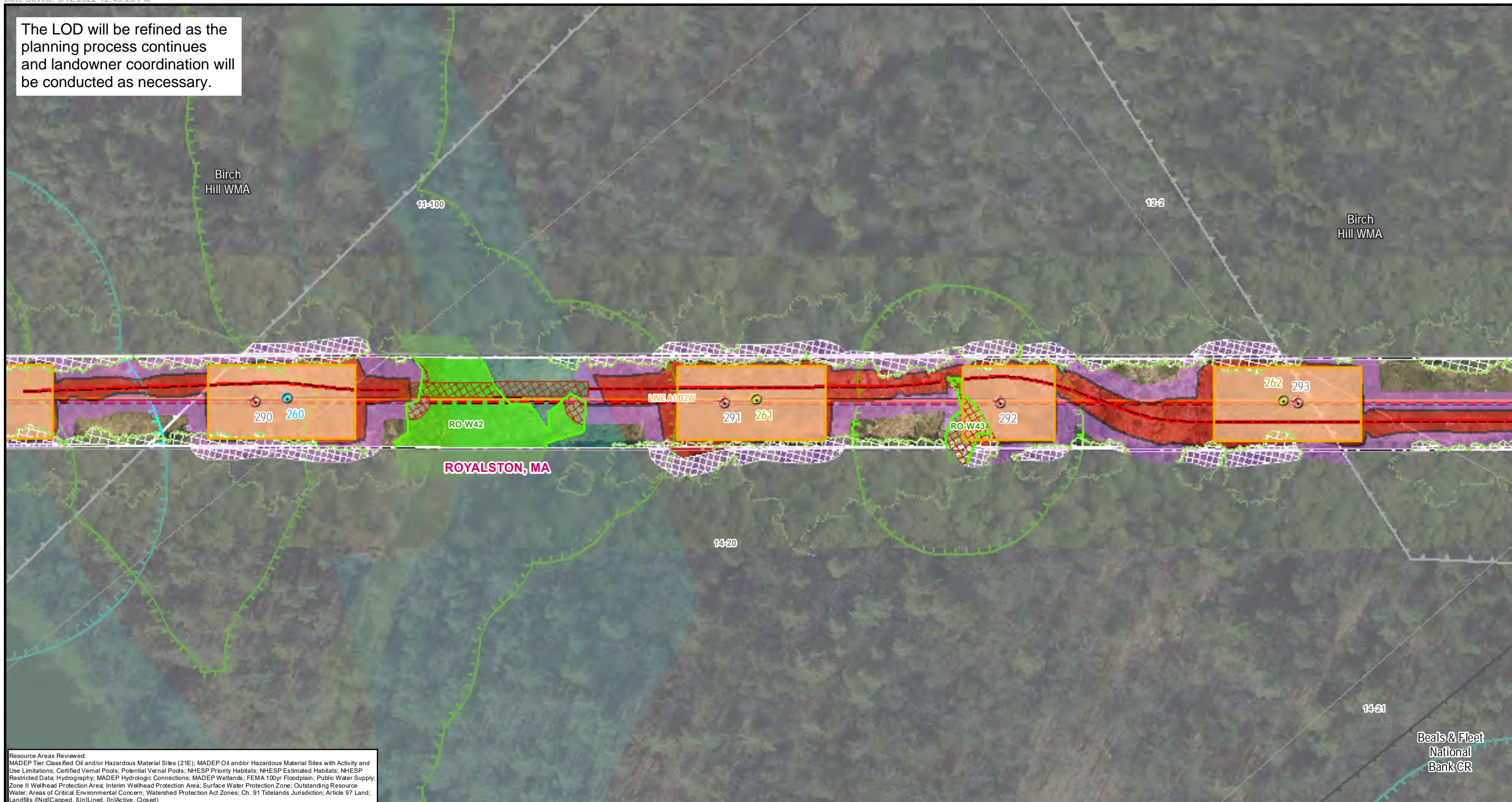
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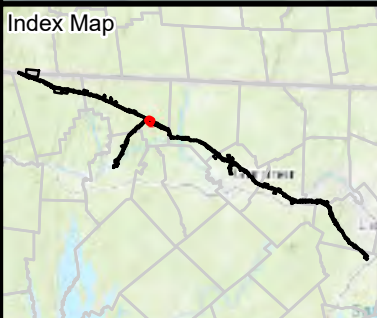
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Legend

Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Interim Wellhead Protection Area	National Grid Property
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Zone II Wellhead Protection Area	Town Boundary
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Surface Water Protection Zone	State Boundary
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Outstanding Resource Water	Gate
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	Public Water Supply	Culvert
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	100ft Buffer to Wetlands & Streams	200ft Riverfront Area	MADEP (21E) Site	Fence
Reuse Structure	Proposed Tree Removal	FEMA 100yr Floodplain*	Certified Vernal Pools	MADEP AUL Site	Stonewall
General Maintenance	Best Management Practices	Potential Vernal Pools	NHESP Priority & Estimated Habitats	Railroad	Guardrail
Proposed Centerline	Construction Matting	NHESP Restricted Data	NHESP Restricted Data	DCR Trails	Environmental Justice 2020 Populations
Remove OH Line	Existing Conditions	Delineated Stream Centerline	Delineated Ordinary High Water	Hiking Trails	Minority & Income
Standard Road Type 1 & 2	Other Existing Transmission Centerline	Delineated Top of Bank	Approximate Top of Bank	Long Distance Trails	Minority
	Edge of ROW	Delineated Stream High Water	Approximate Swale	Parcel Boundary	Income

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A1/B2 ACR PROJECT

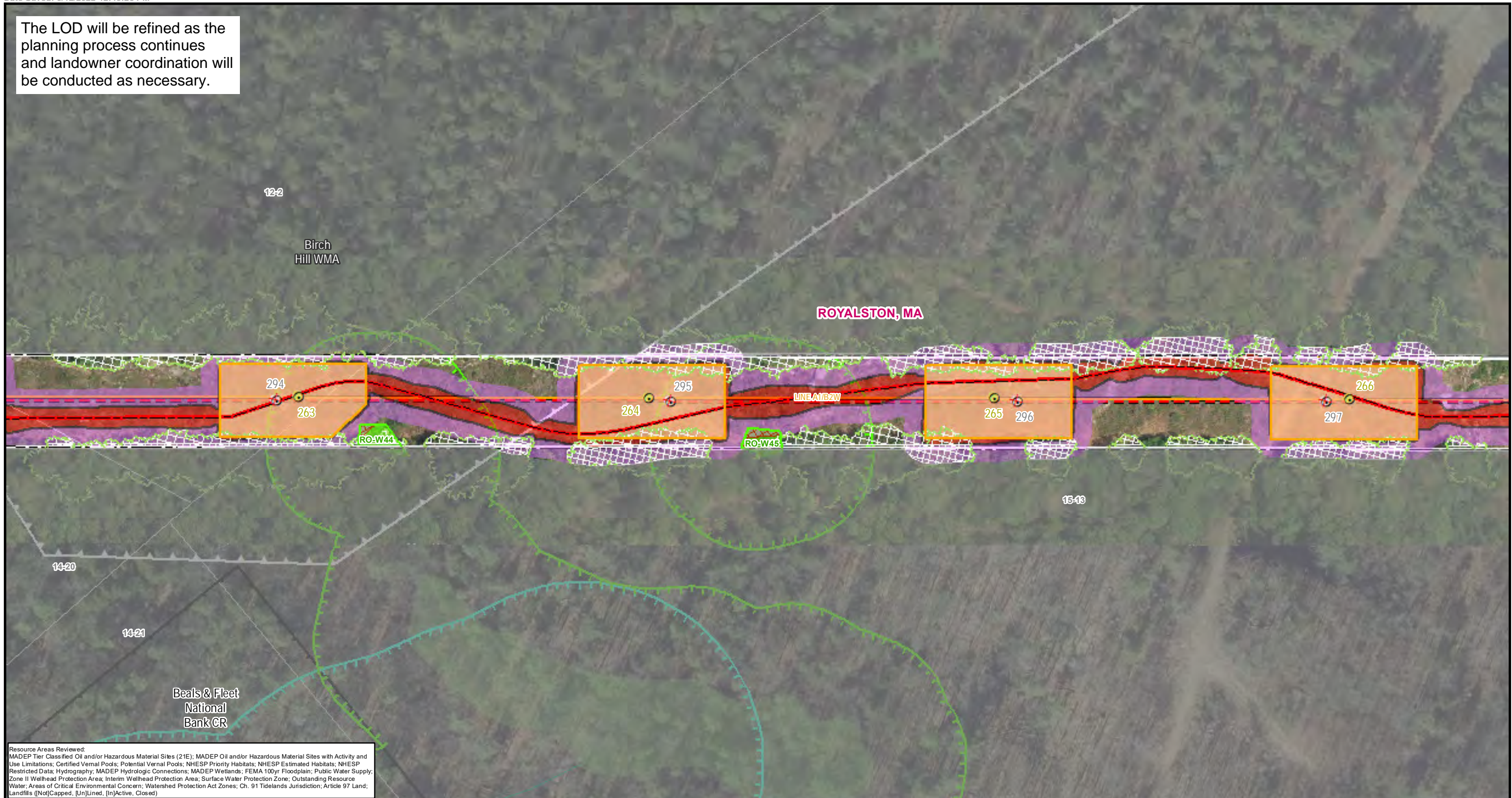
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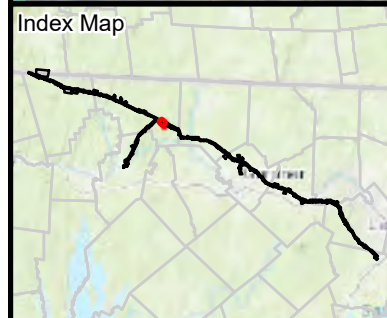
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Legend	
Remove Structure	Designed Road Type 3-5
Install Structure (Concrete Caisson)	Work Envelope
Install Structure (Direct Embed)	Pull Pad
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill
In Kind Direct Embed Structure Replacement	Limit of Disturbance
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall
Reuse Structure	Proposed Tree Removal
General Maintenance	Proposed Centerline
Remove OH Line	Other Existing Transmission Centerline
Standard Road Type 1 & 2	Edge of ROW
Existing Access	Approximate Wetland Edge
Existing Tree Line	Approximate Wetland
Delineated Wetland Edge	State Streams
Delineated Wetland	State Wetlands*
Delineated Vernal Pool Extent*	State Open Water*
Delineated Top of Bank	100ft Buffer to Wetlands & Streams
Delineated Stream Centerline	200ft Riverfront Area
Delineated Ordinary High Water	FEMA 100yr Floodplain*
Approximate Top of Bank	Certified Vernal Pools
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Approximate Swale	NHESP Priority & Estimated Habitats
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Interim Wellhead Protection Area	Zone II Wellhead Protection Area
Surface Water Protection Zone	Outstanding Resource Water
Public Water Supply	MADEP (21E) Site
MADEP AUL Site	MADEP AUL Site
Railroad	DCR Trails
Hiking Trails	Long Distance Trails
Parcel Boundary	Parcel Boundary
National Grid Property	Town Boundary
State Boundary	State Boundary
Gate	Gate
Culvert	Culvert
Fence	Fence
Stonewall	Stonewall
Guardrail	Guardrail
Environmental Justice 2020 Populations	Environmental Justice 2020 Populations
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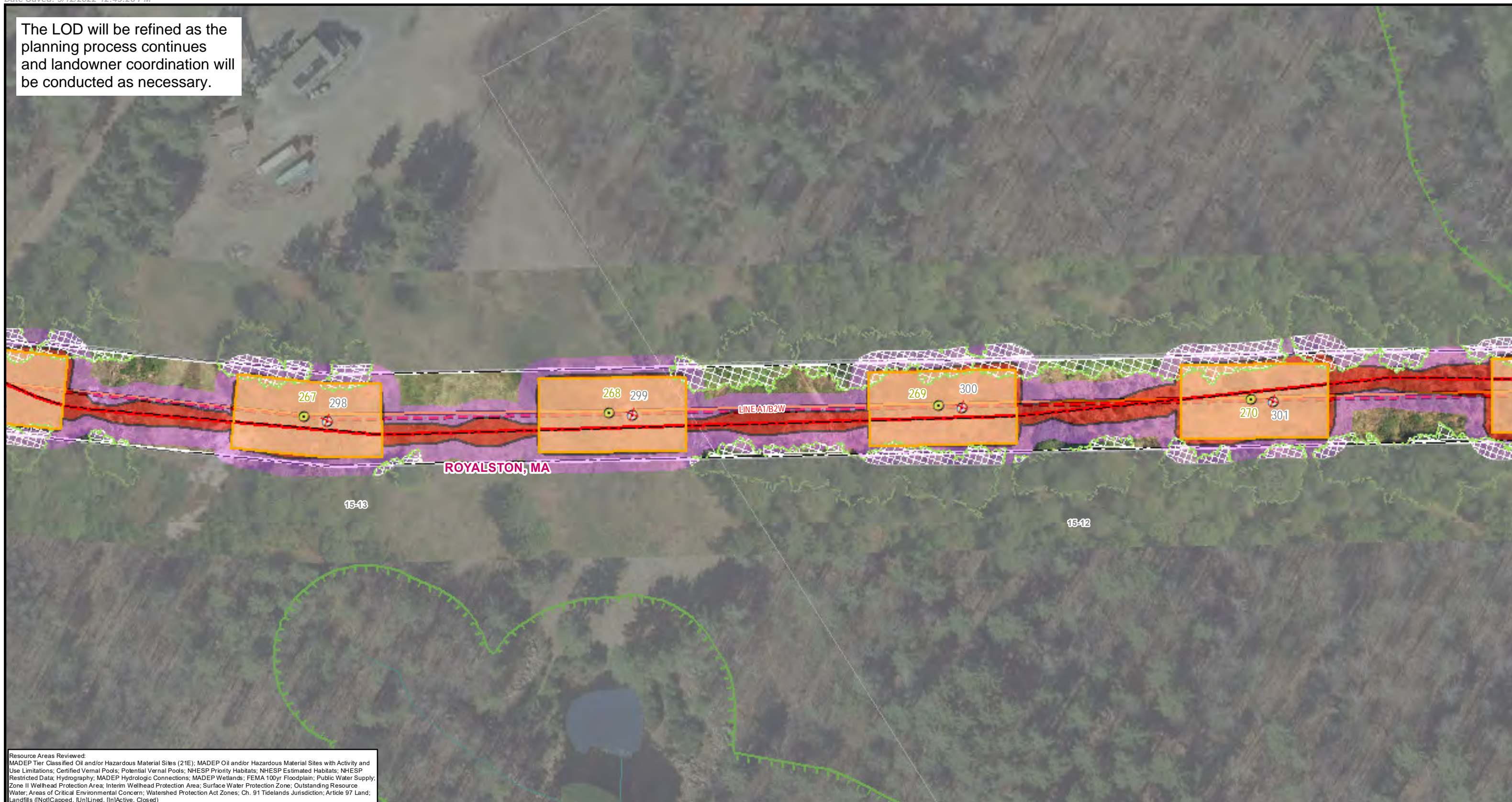
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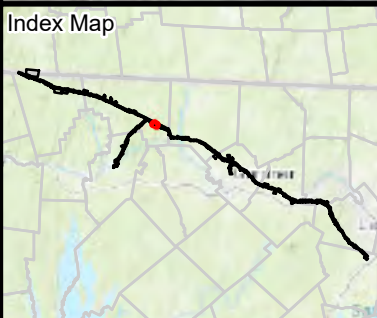
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Resource Areas Reviewed:
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

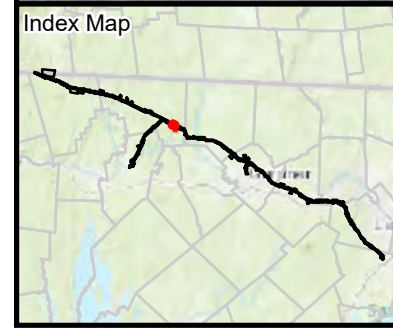
Royalston, MA
Page 51 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

Royalston, MA
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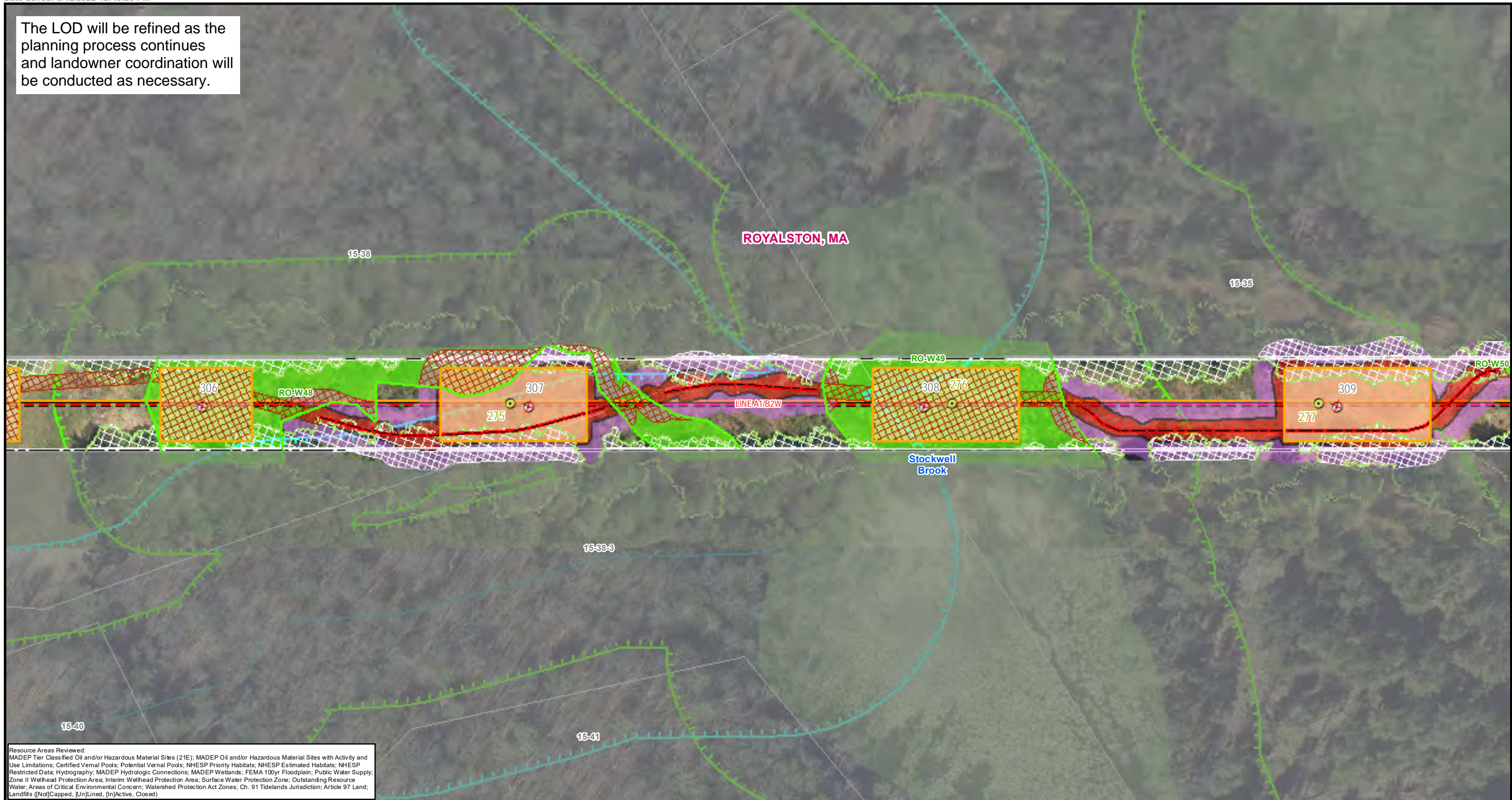
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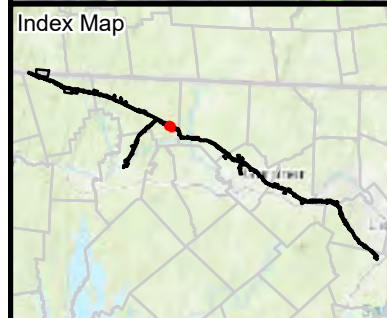
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nationalgrid
BSC GROUP

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A1/B2 ACR PROJECT

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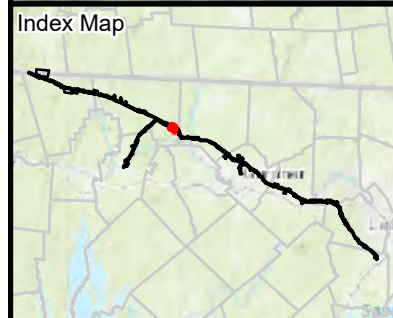
Royalston, MA
 Page 53 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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0 50 100 Feet

**Indicates Layers Set to Transparency*

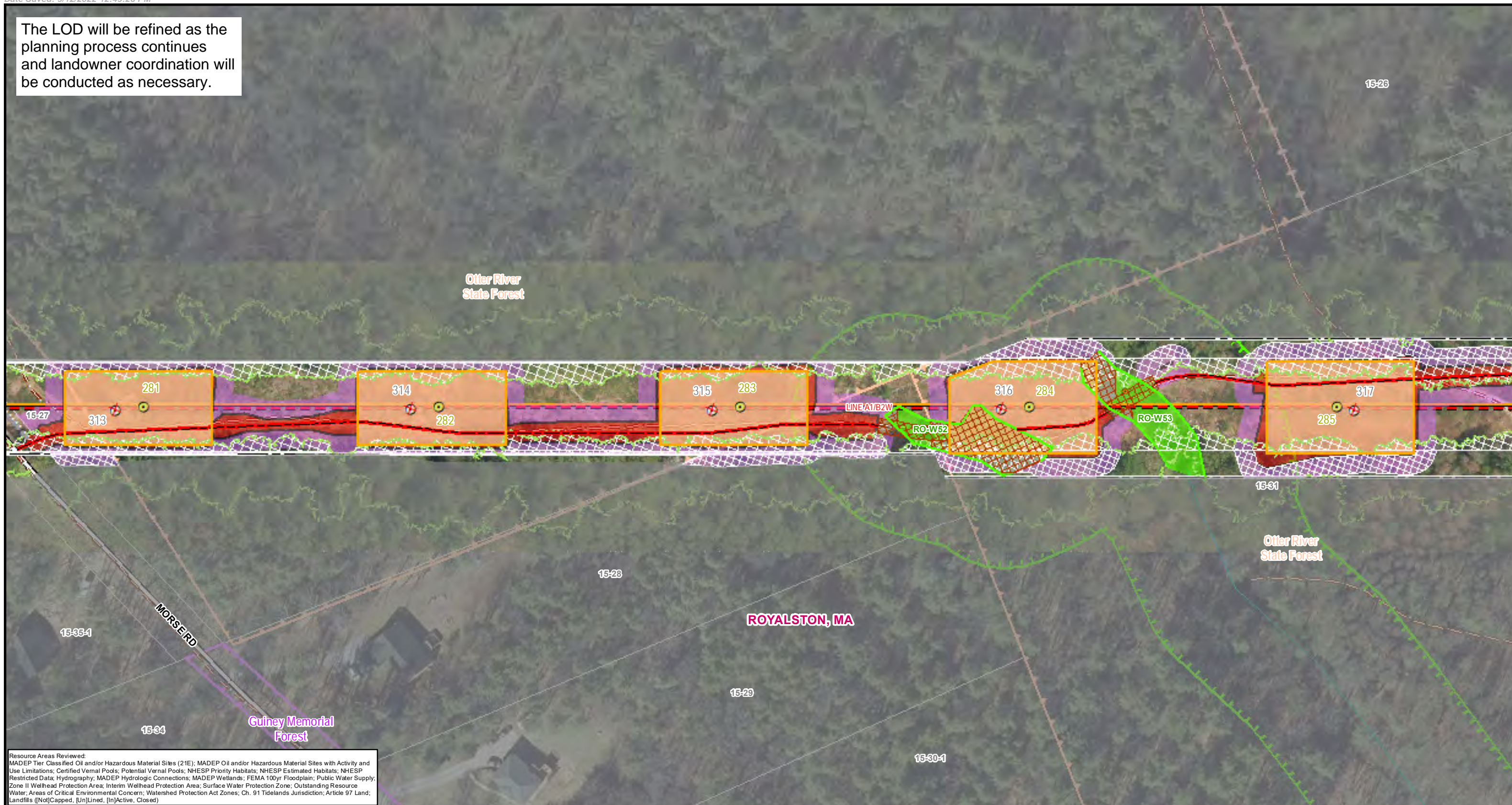
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

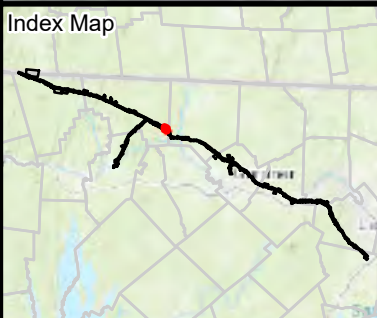
Royalston, MA
Page 54 of 168

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Construction Activities		Resource Areas		Existing Conditions		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Proposed Centerline	Remove OH Line	Standard Road Type 1 & 2	Proposed Retaining Wall
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Proposed Retaining Wall	Proposed Tree Removal	Best Management Practices	Construction Matting
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
Reuse Structure	Proposed Retaining Wall	Delineated Stream Centerline	200ft Riverfront Area	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
General Maintenance	Proposed Tree Removal	Delineated Ordinary High Water	FEMA 100yr Floodplain*	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
	Best Management Practices	Approximate Top of Bank	Certified Vernal Pools	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
	Construction Matting	Approximate Ordinary High Water	Potential Vernal Pools	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
	Existing Conditions	Approximate Swale	NHESP Priority & Estimated Habitats	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
	Existing Structure	Delineated Open Water*	NHESP Restricted Data	Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
	Other Existing Transmission Centerline			Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting
	Edge of ROW			Proposed Tree Removal	Proposed Tree Removal	Construction Matting	Construction Matting

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans 50% Design September 12, 2022

Royalston, MA
Page 55 of 168

1 inch = 100 feet
0 50 100
Feet

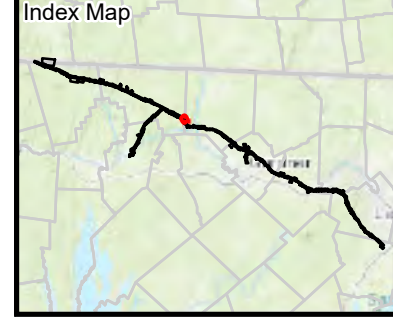
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Figure 2: MEPA General Purpose Plans
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Royalston & Winchendon, MA
Page 56 of 168

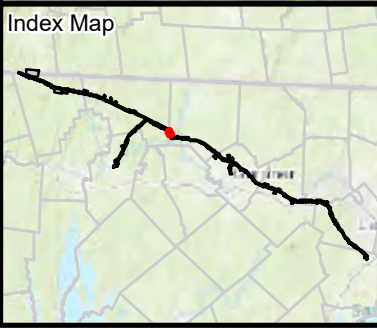
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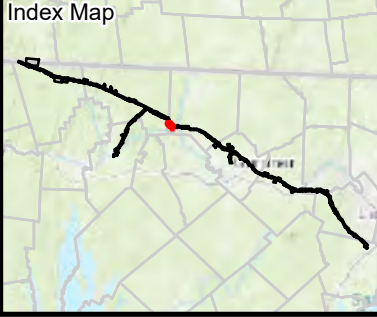
Royalston & Winchendon, MA
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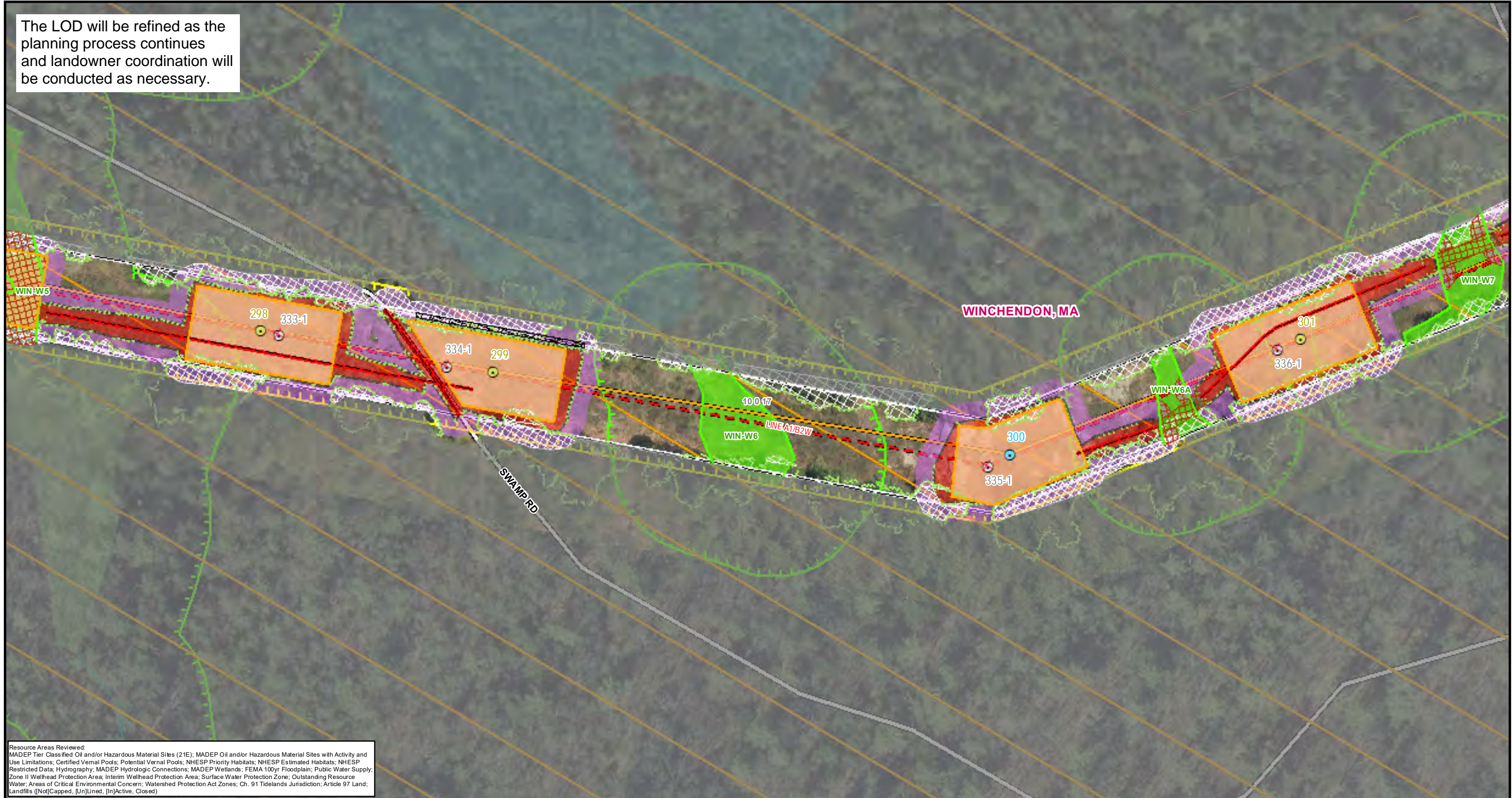
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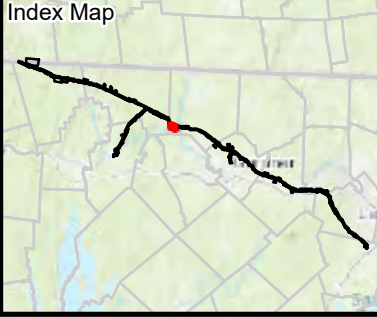
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Install Structure (Direct Embed)	Pull Pad	100ft Existing Tree Line	State Streams	Proposed Retaining Wall	Edge of ROW	Surface Water Protection Zone	Department of Fish & Game
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland Edge	State Wetlands*	Proposed Tree Removal	Standard Road Type 1 & 2	Outstanding Resource Water	Land Trust
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Wetland	State Open Water*	Proposed Retaining Wall		Public Water Supply	Municipal
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Vernal Pool Extent*	100ft Buffer to Wetlands & Streams	Proposed Tree Removal		MADEP (21E) Site	Private
Reuse Structure	Proposed Tree Removal	Delineated Top of Bank	200ft Riverfront Area	Proposed Tree Removal		MADEP AUL Site	
General Maintenance	Best Management Practices	Delineated Stream Centerline	FEMA 100yr Floodplain*	Proposed Tree Removal		Railroad	
	Construction Matting	Delineated Ordinary High Water	Certified Vernal Pools	Proposed Tree Removal		Hiking Trails	
	Existing Conditions	Approximate Top of Bank	Potential Vernal Pools	Proposed Tree Removal		Long Distance Trails	
	Remove Structure	Approximate Ordinary High Water	NHESP Priority & Estimated Habitats	Proposed Tree Removal		Parcel Boundary	
	Remove OH Line	Approximate Swale	NHESP Restricted Data	Proposed Tree Removal			
	Standard Road Type 1 & 2	Delineated Open Water*		Proposed Tree Removal			

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

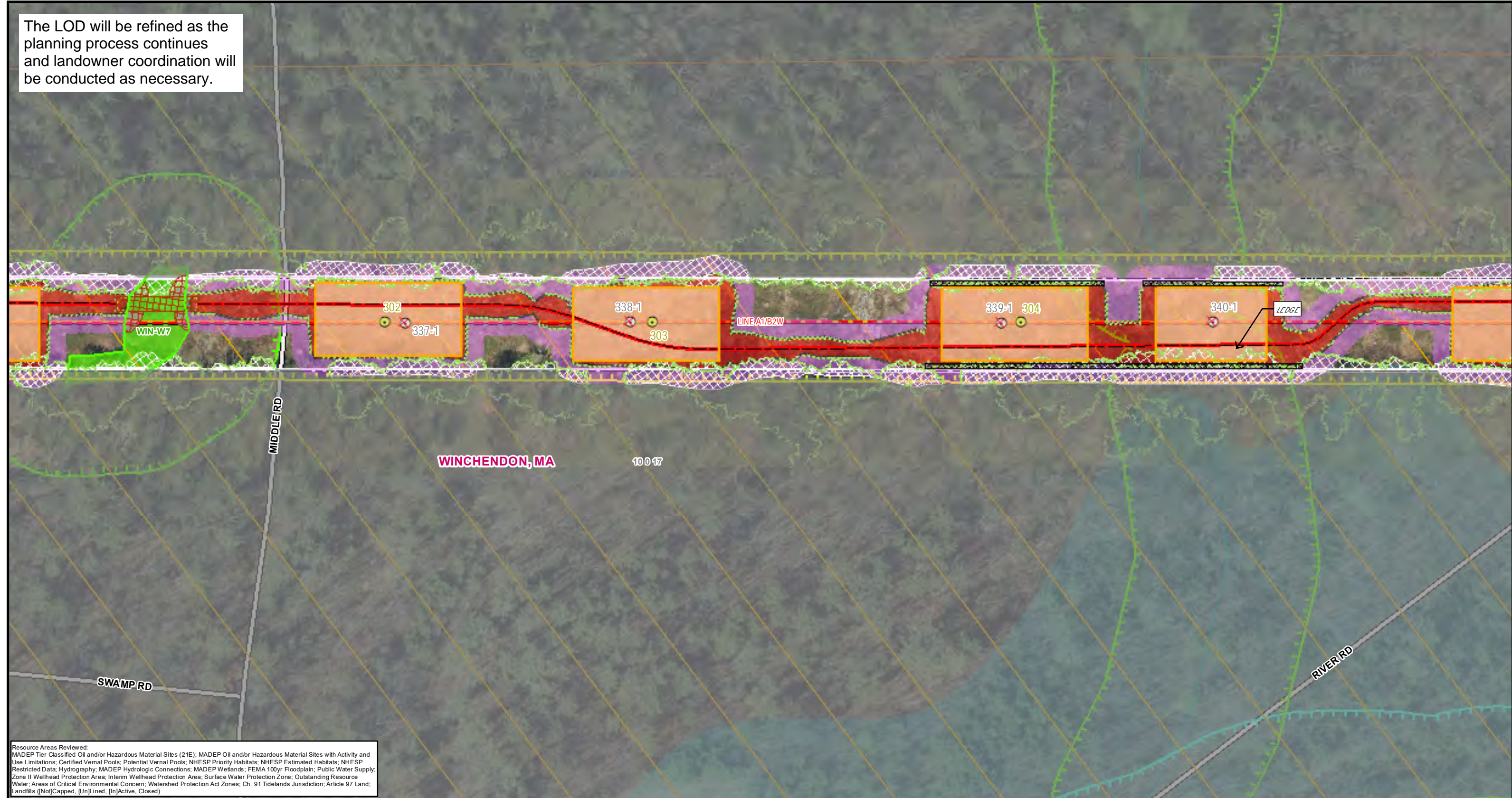
Winchendon, MA
 Page 59 of 168

1 inch = 100 feet
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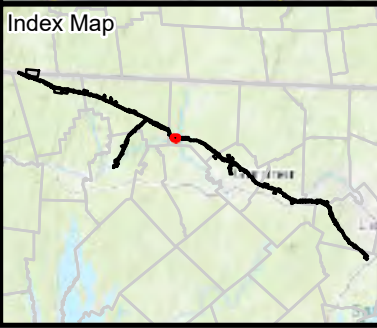
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Resource Areas Reviewed:
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income
<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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1 inch = 100 feet

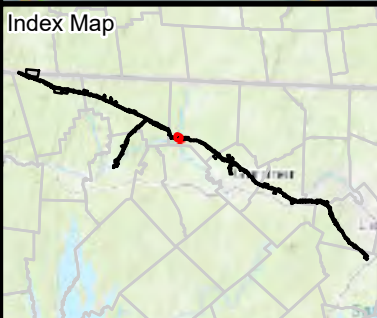
Feet

**Indicates Layers Set to Transparency*

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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Work Envelope	Existing Access	Approximate Wetland Edge	Minority & Income	Minority
Install Structure (Concrete Caisson)	Pull Pad	Existing Tree Line	Approximate Wetland	Minority	Income
Install Structure (Direct Embed)	Limit of Cut/Fill	Delineated Wetland Edge	State Streams		
Install Structure (Vertical Jumper Switch)	Limit of Disturbance	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Proposed Retaining Wall	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Tree Removal	100ft Buffer to Wetlands & Streams	100ft Buffer to Wetlands & Streams		
Reuse Structure	Best Management Practices	200ft Riverfront Area	200ft Riverfront Area		
General Maintenance	Construction Matting	FEMA 100yr Floodplain*	FEMA 100yr Floodplain*		
Proposed Centerline	Existing Conditions	Certified Vernal Pools	Certified Vernal Pools		
Remove OH Line	Existing Structure	Potential Vernal Pools	Potential Vernal Pools		
Standard Road Type 1 & 2	Other Existing Transmission Centerline	NHESP Priority & Estimated Habitats	NHESP Priority & Estimated Habitats		
	Edge of ROW	NHESP Restricted Data	NHESP Restricted Data		

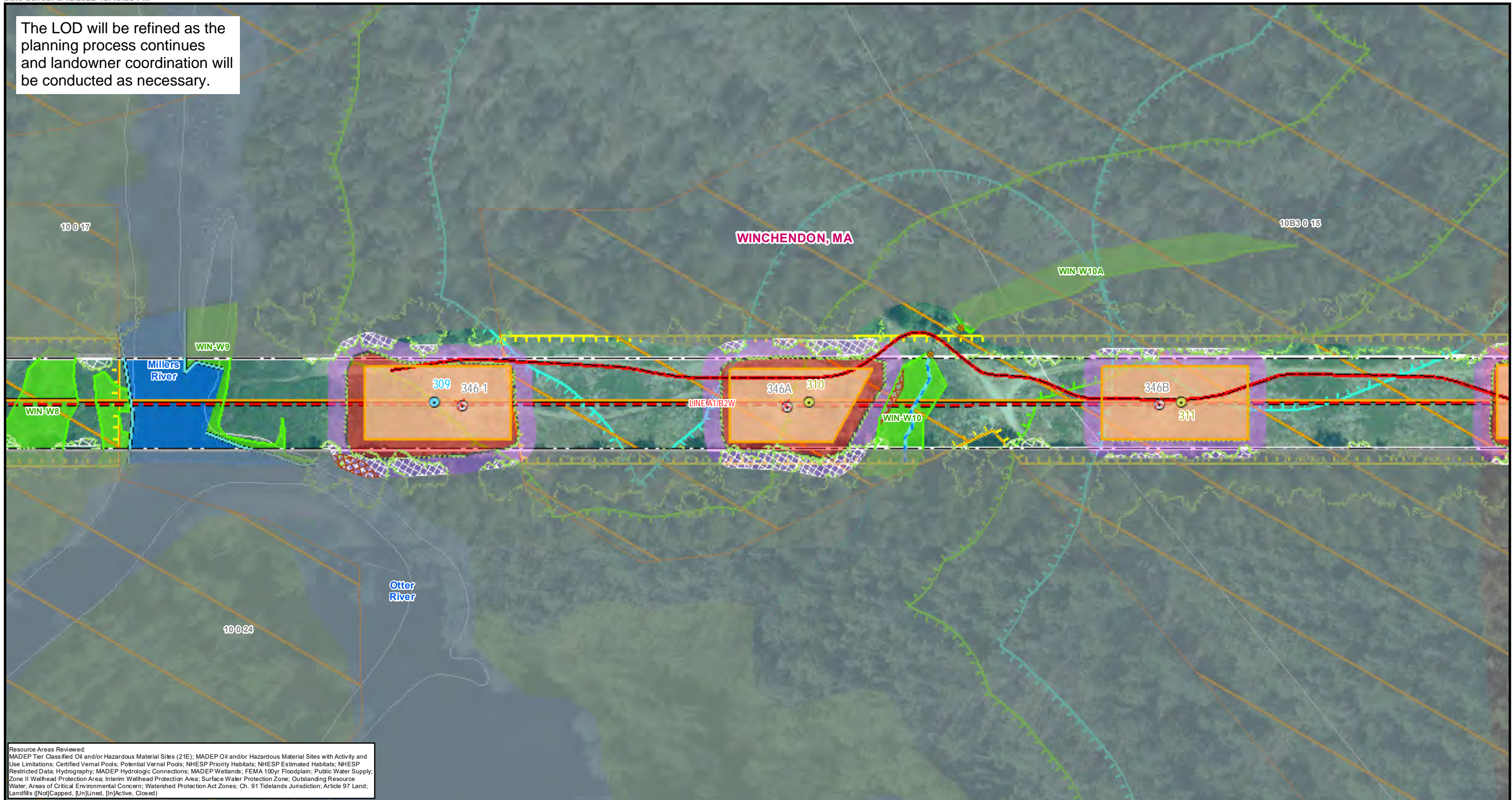
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

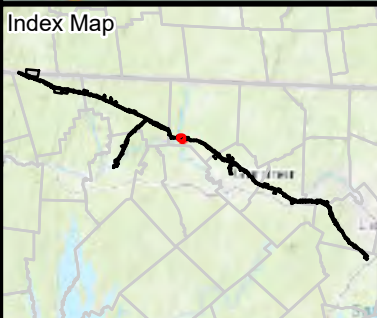
Winchendon, MA
 Page 61 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	National Grid Property	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Town Boundary	Minority
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	State Boundary	Income
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Gate	
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	Culvert	
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams	Fence	
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area	Stonewall	
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*	Guardrail	
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

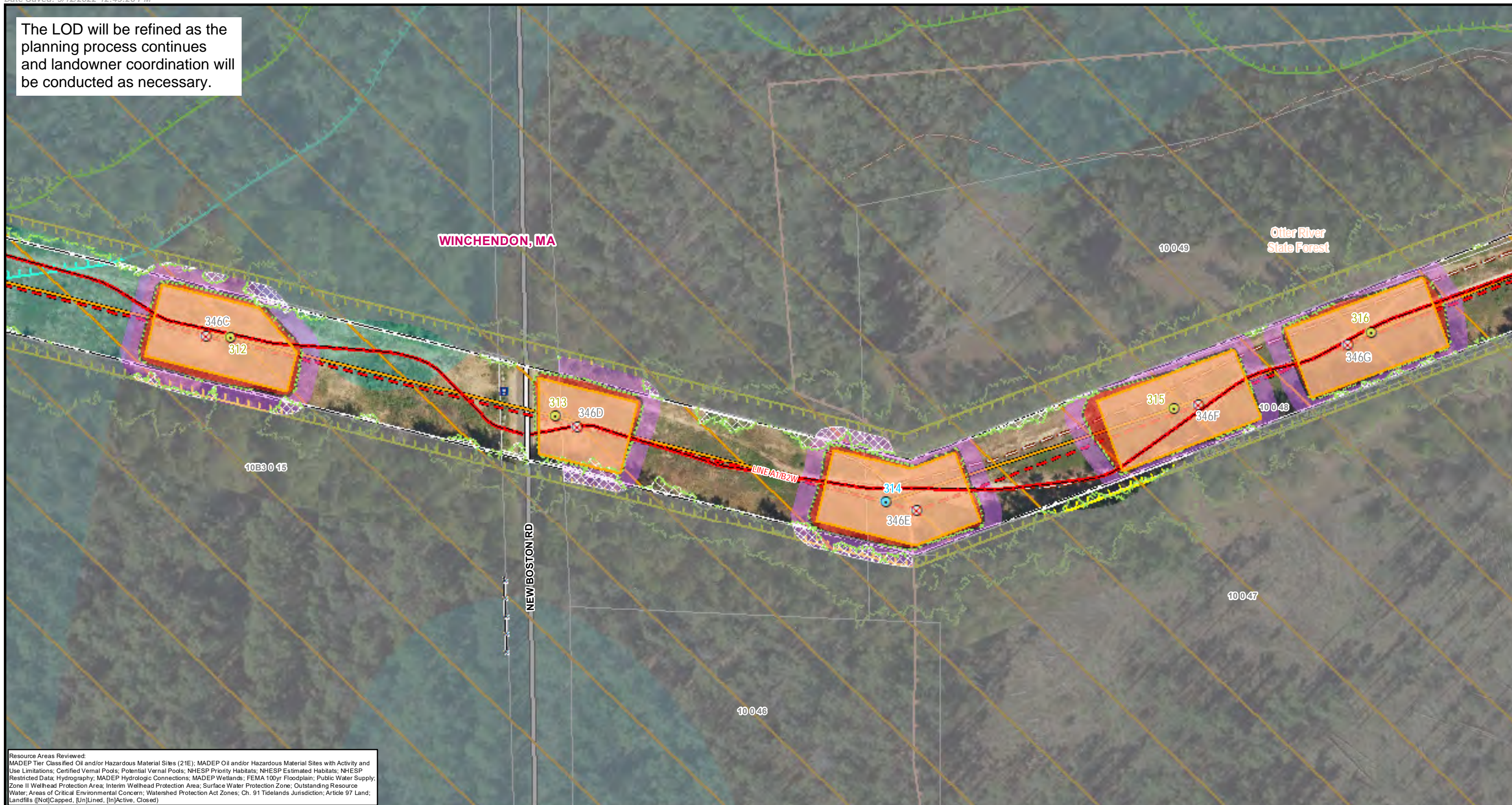
Winchendon, MA
 Page 62 of 168

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 Feet

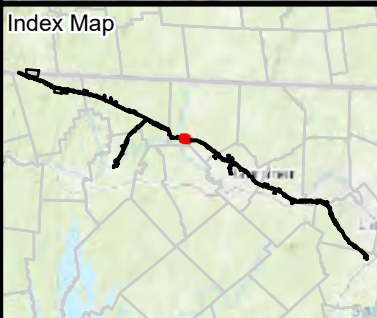
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Legend	
Construction Activities	Resource Areas
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

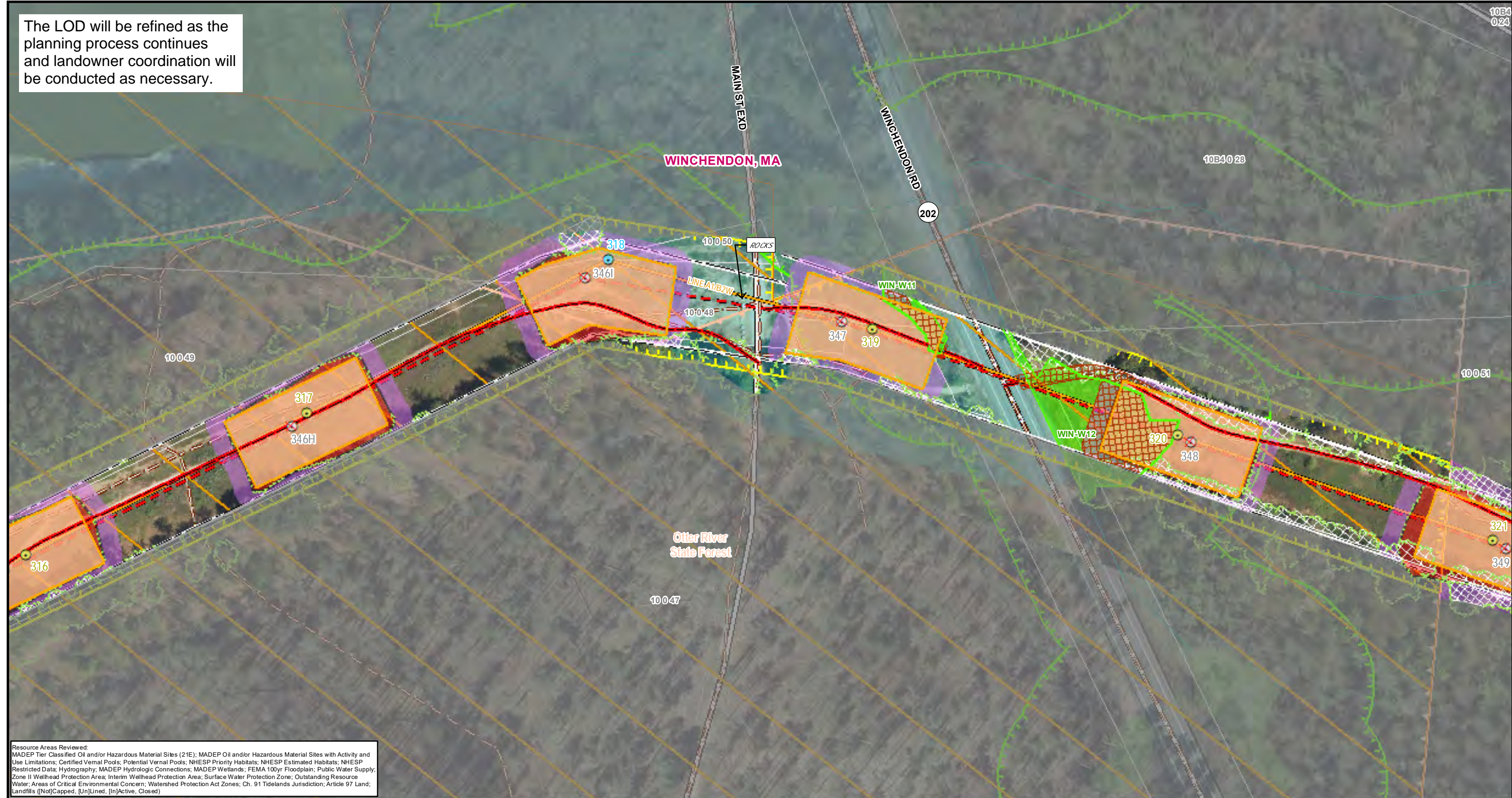
Winchendon, MA
Page 63 of 168

1 inch = 100 feet
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Feet

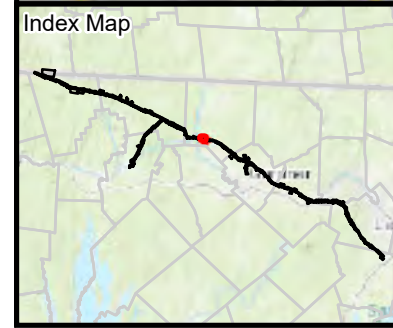
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

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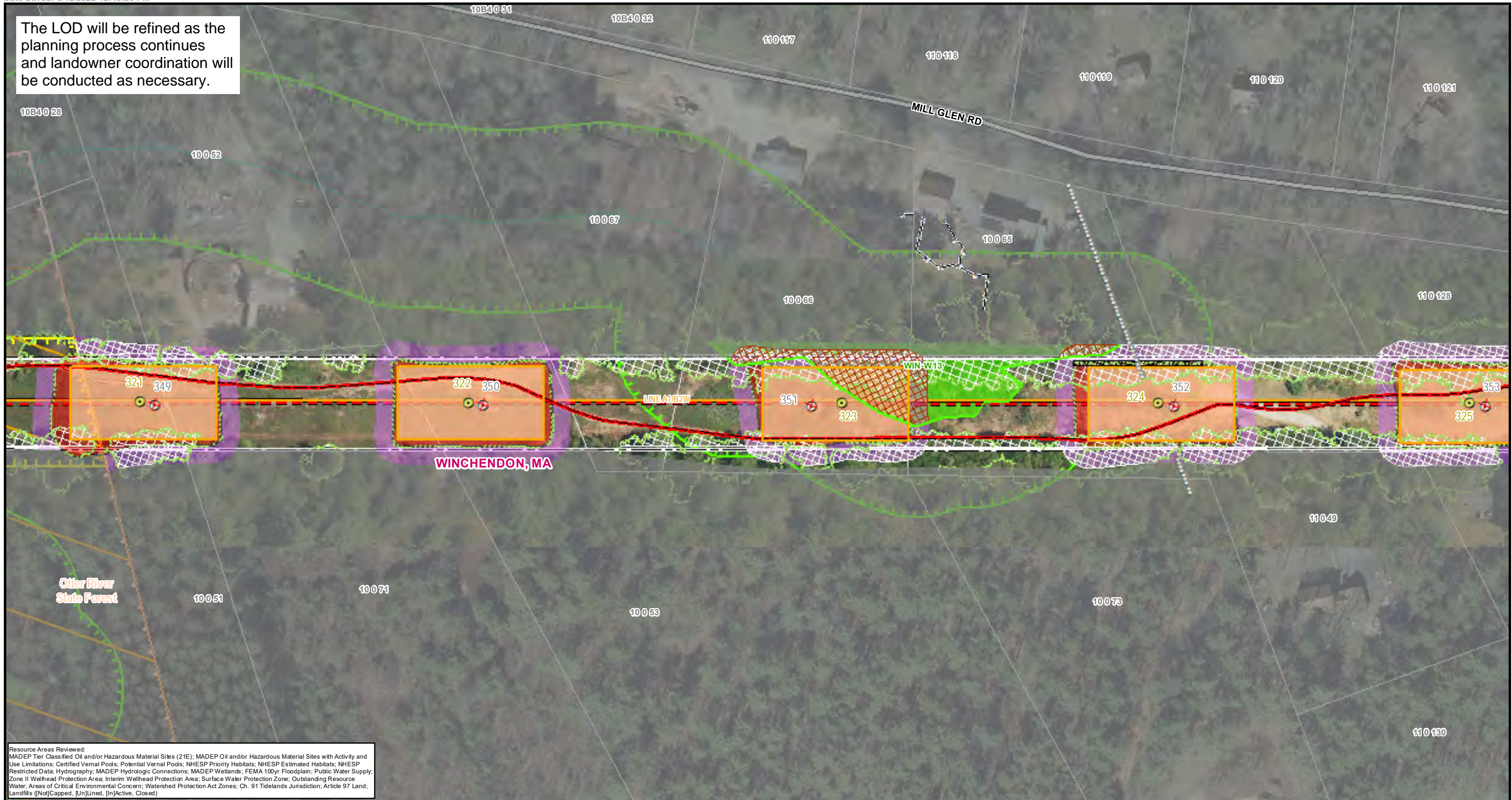
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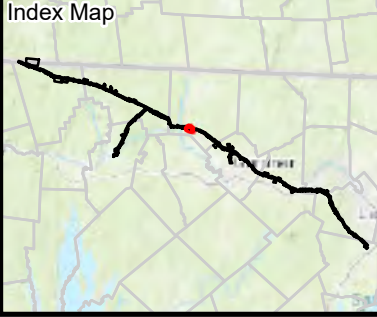
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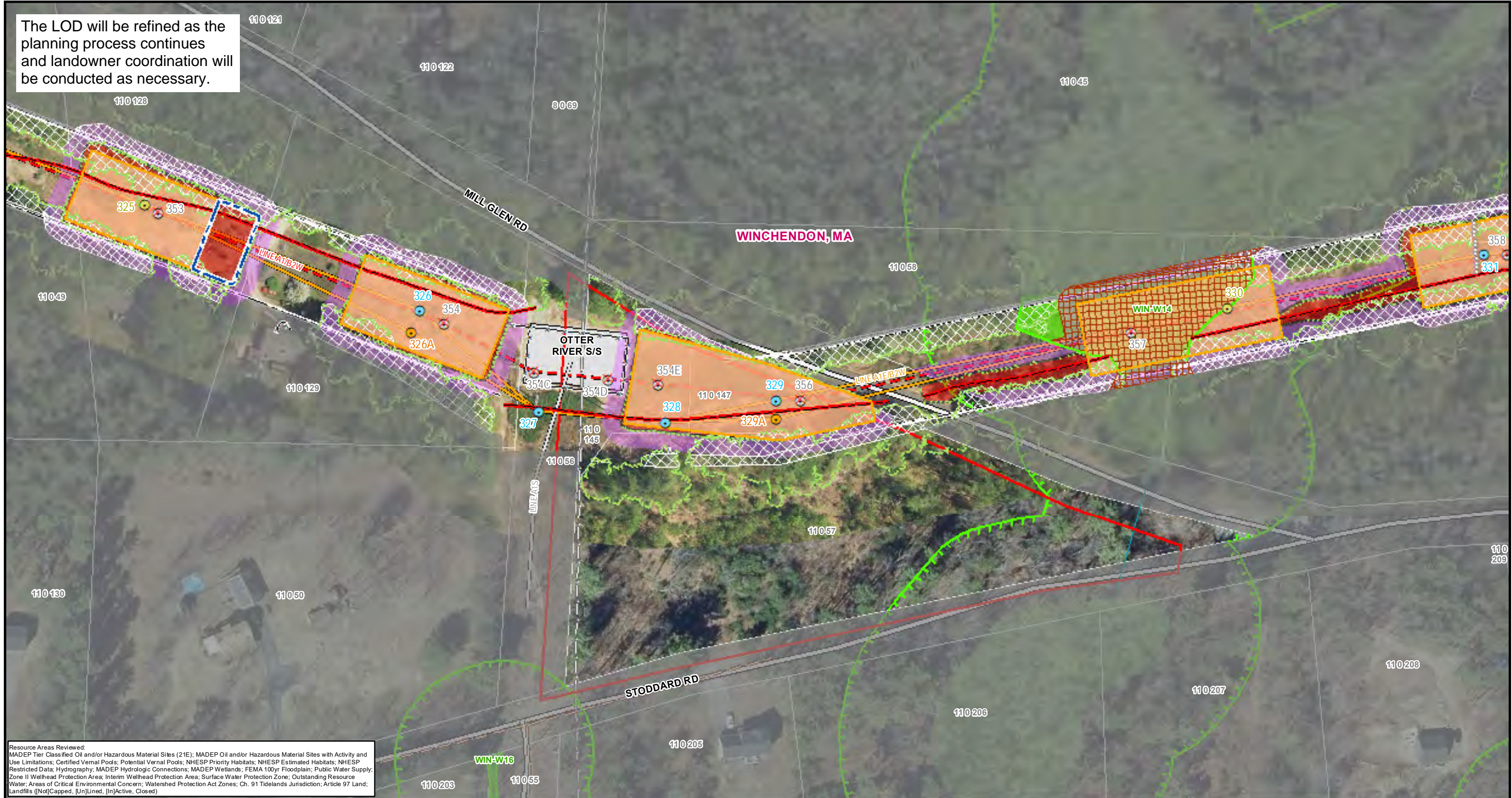
A1/B2 ACR PROJECT

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50% Design
September 12, 2022

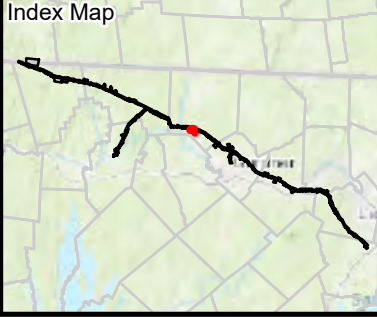
Winchendon, MA
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A1/B2 ACR PROJECT

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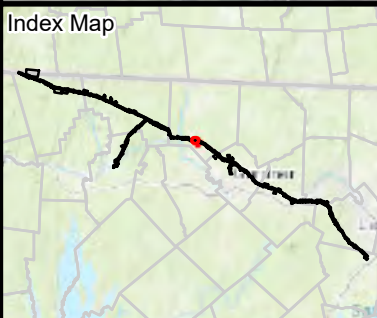
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nationalgrid
BSC GROUP

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Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
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	Edge of ROW				

A1/B2 ACR PROJECT

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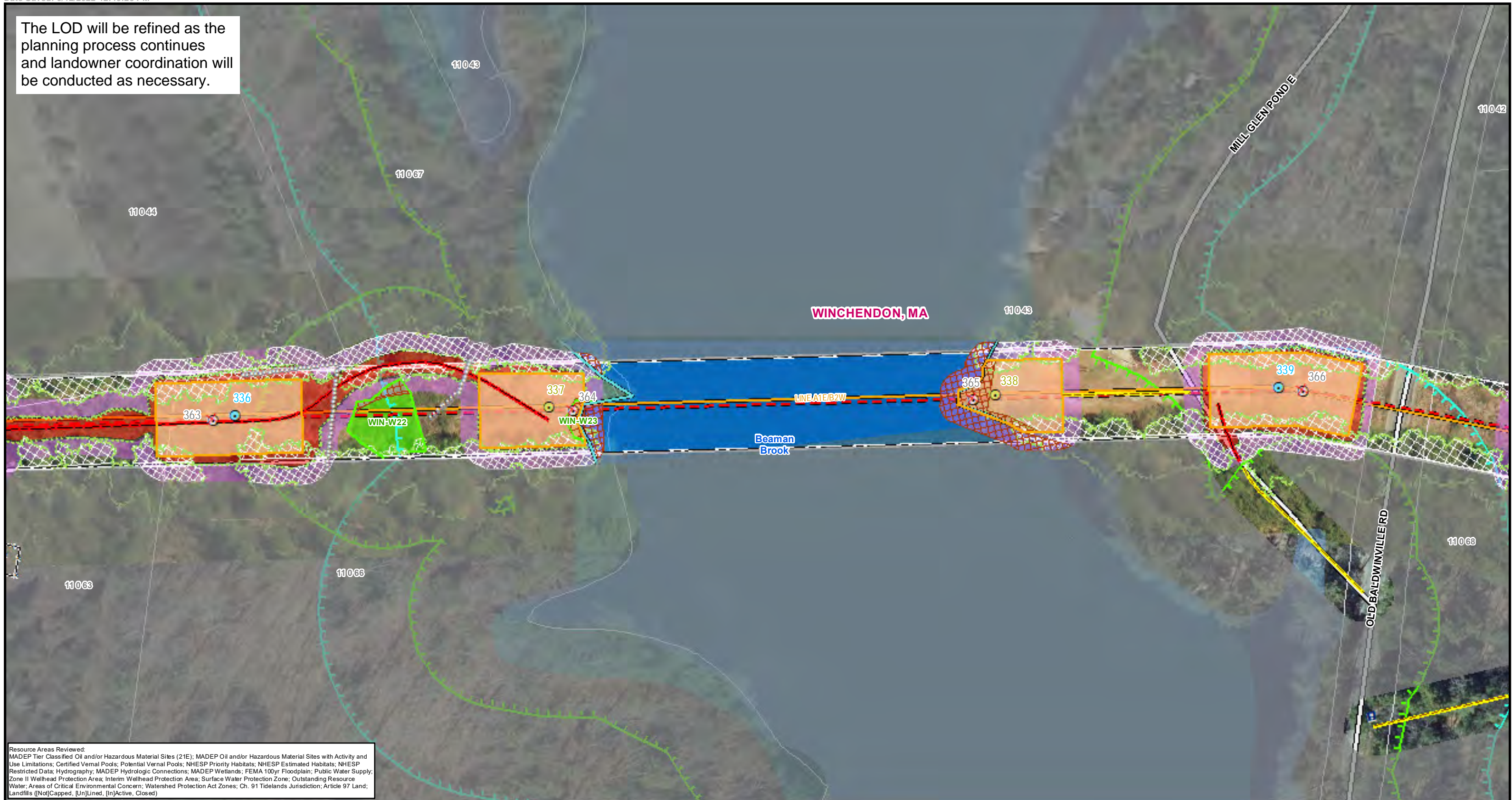
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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1 inch = 100 feet

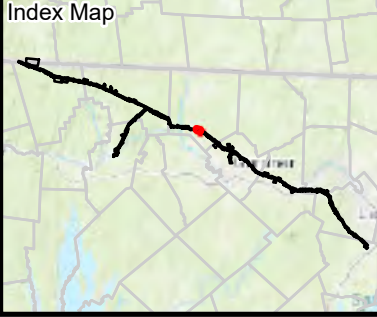
Feet

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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Minority
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Income	Income
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

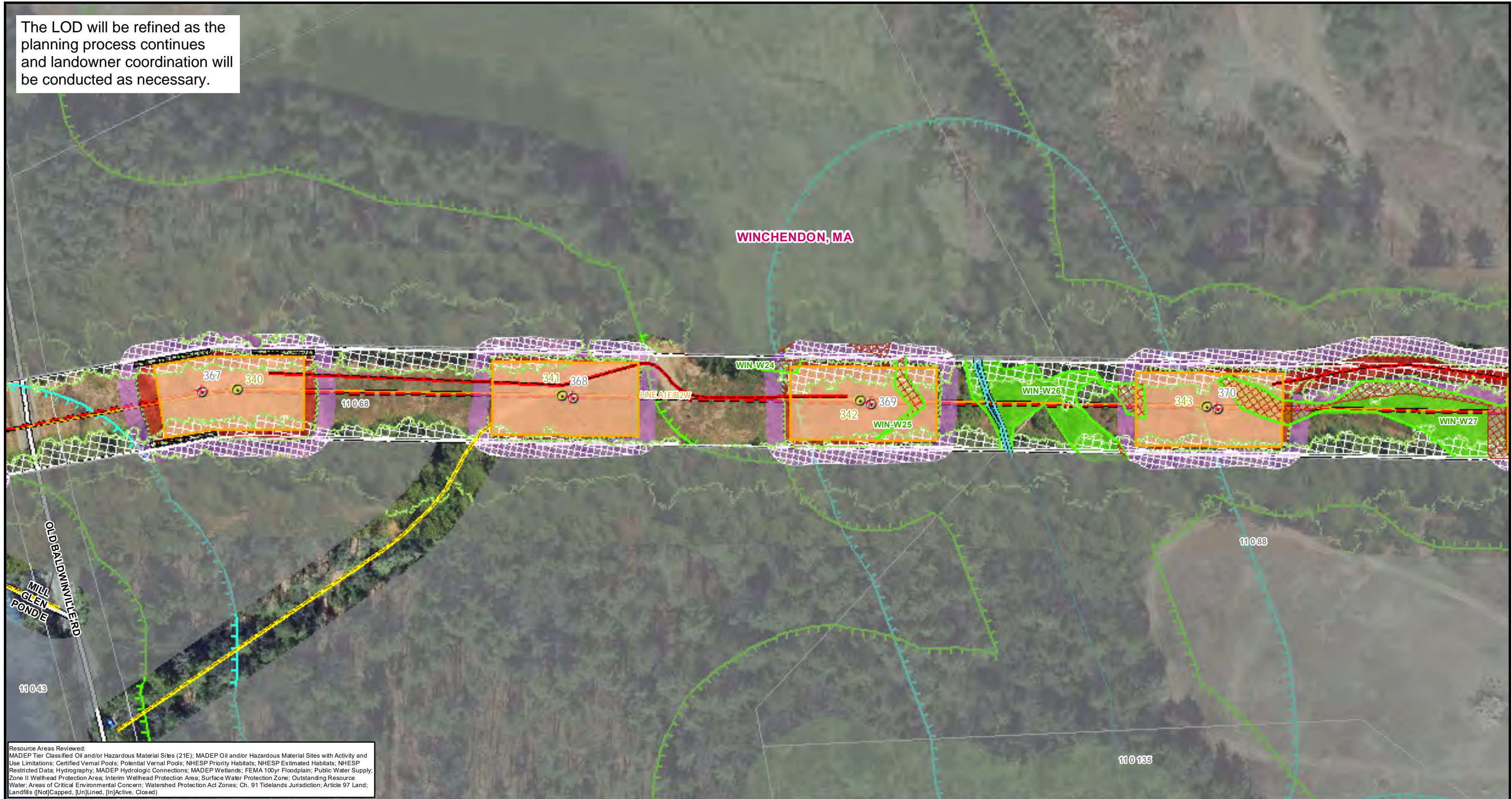
Winchendon, MA
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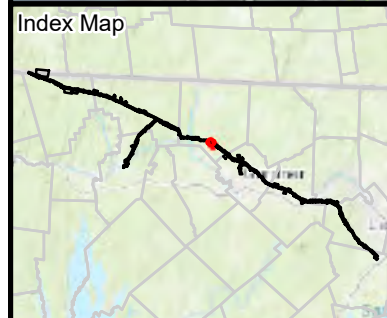
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Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

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Figure 2: MEPA General Purpose Plans

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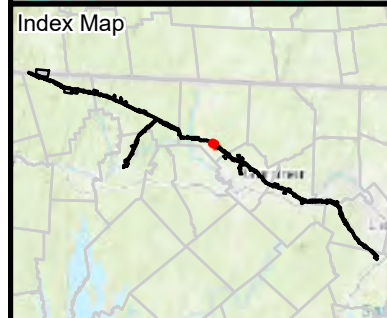
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Legend	
Construction Activities	Resource Areas
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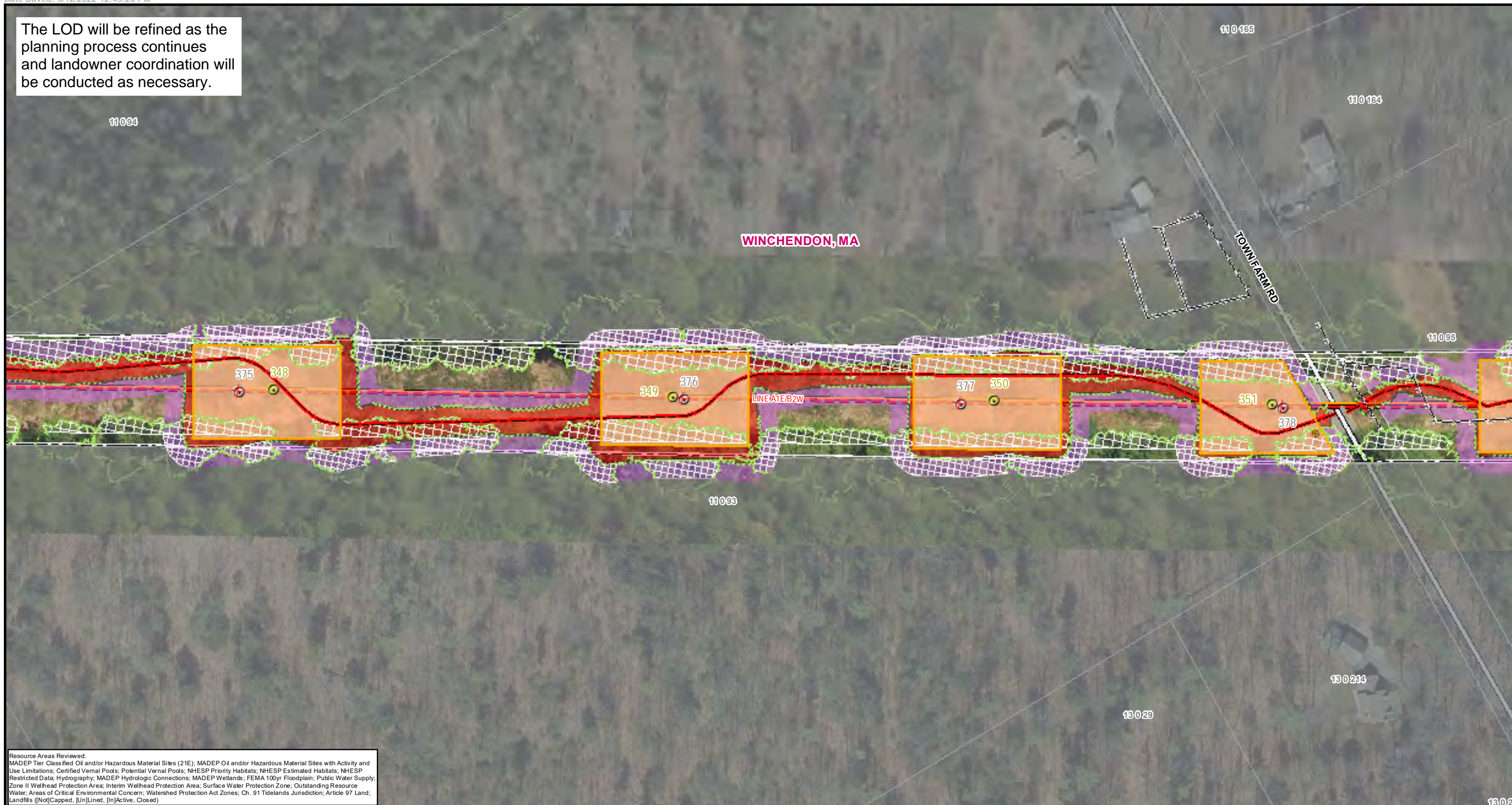
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

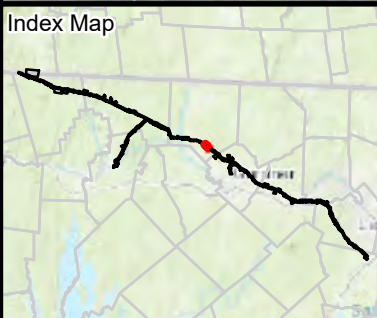
Winchendon, MA
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Construction Activities	Resource Areas
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A1/B2 ACR PROJECT

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September 12, 2022

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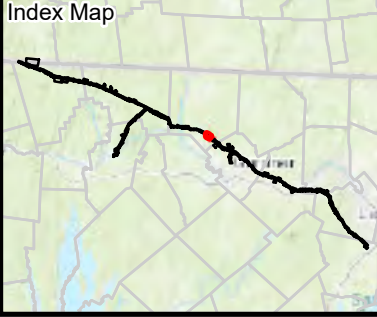
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

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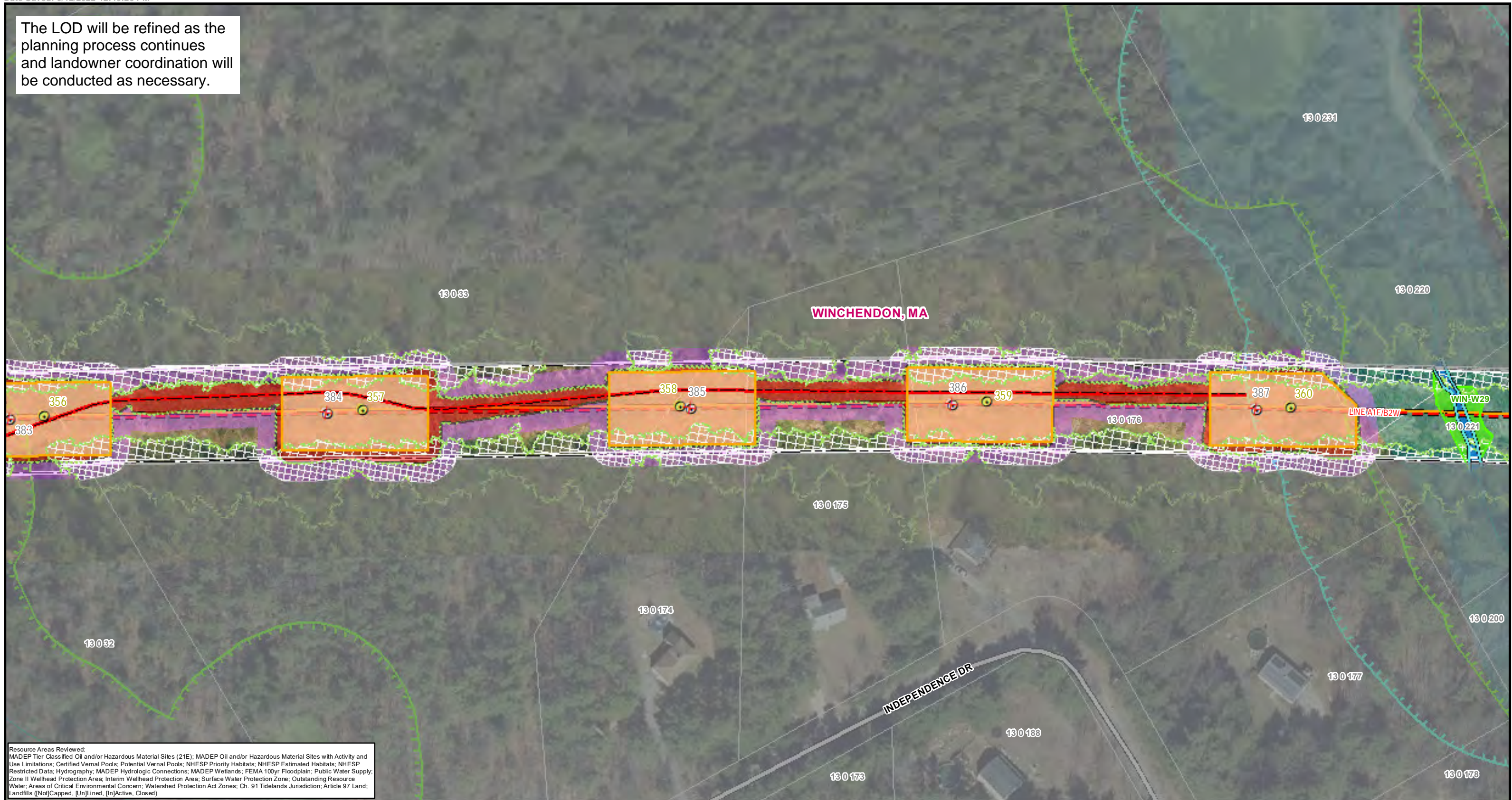
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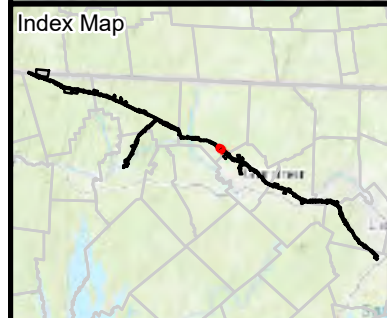
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A1/B2 ACR PROJECT

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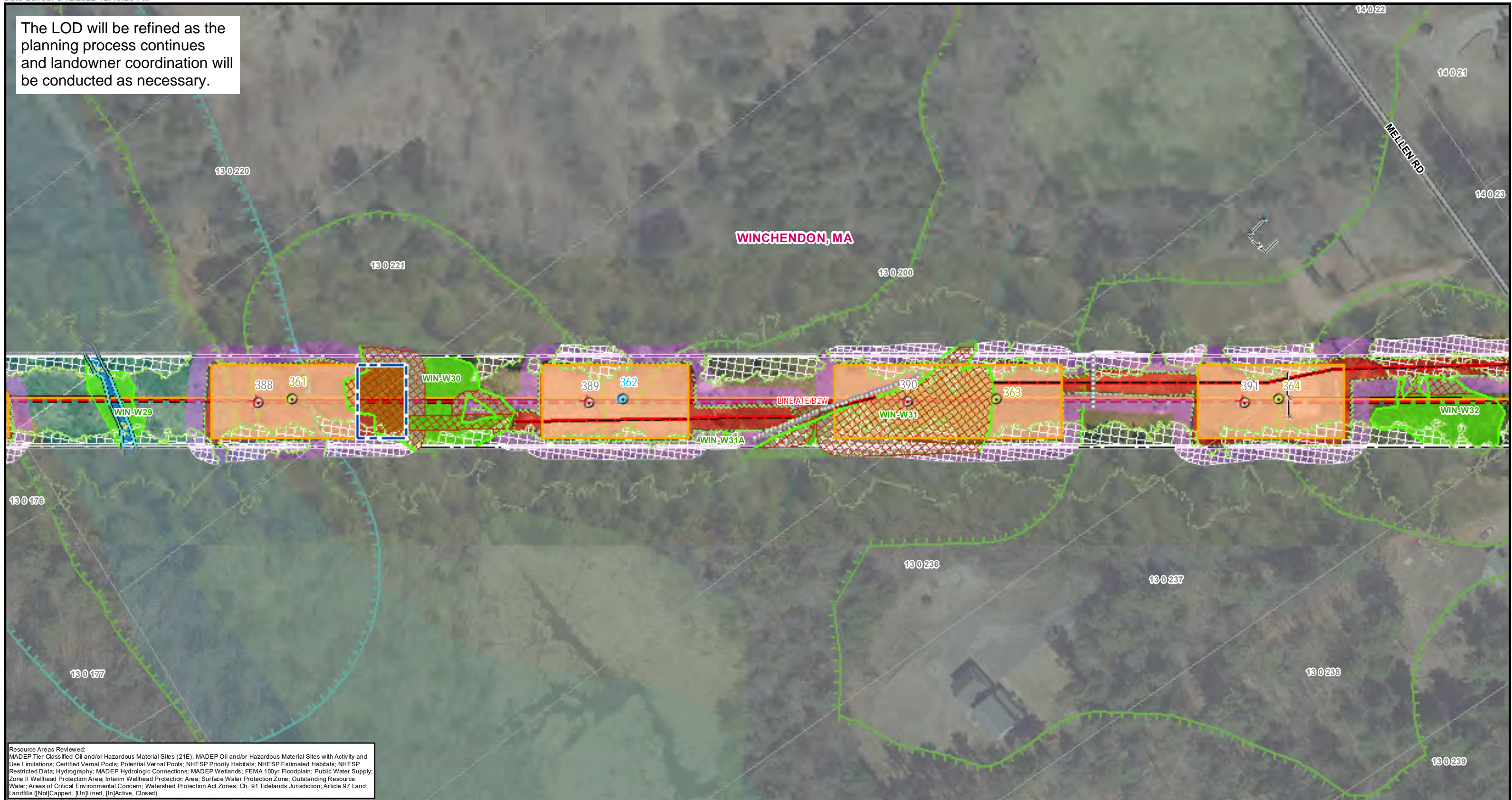
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Winchendon, MA

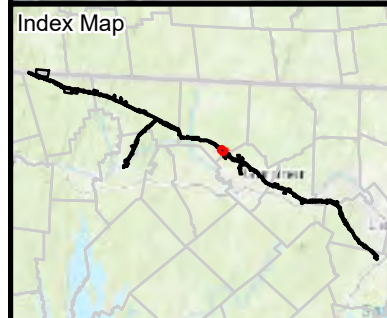
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Reuse Structure	Proposed Tree Removal
General Maintenance	Best Management Practices
Proposed Centerline	Construction Matting
Remove OH Line	Existing Conditions
Standard Road Type 1 & 2	Existing Structure
Existing Access	Other Existing Transmission Centerline
Existing Tree Line	Edge of ROW
Delineated Wetland Edge	Approximate Wetland Edge
Delineated Wetland	Approximate Wetland
Delineated Vernal Pool Extent*	State Streams
Delineated Top of Bank	State Wetlands*
Delineated Stream Centerline	State Open Water*
Delineated Ordinary High Water	100ft Buffer to Wetlands & Streams
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MADEP AUL Site	MADEP AUL Site
National Grid Property	Railroad
Town Boundary	DCR Trails
State Boundary	Hiking Trails
Gate	Long Distance Trails
Culvert	Parcel Boundary
Fence	Stone wall
Stonewall	Guardrail
Environmental Justice 2020 Populations	Minority & Income
Minority	Income

A1/B2 ACR PROJECT

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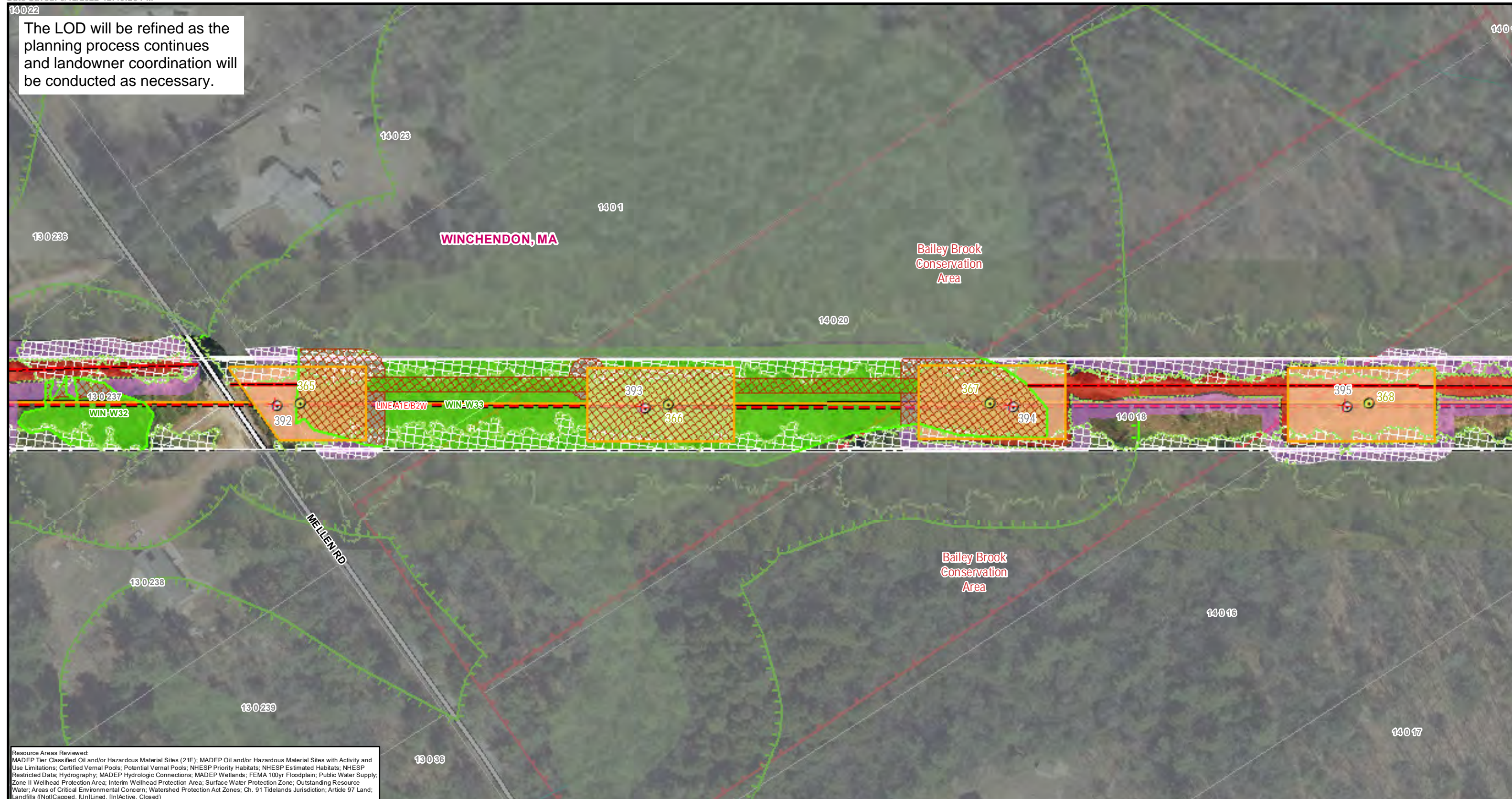
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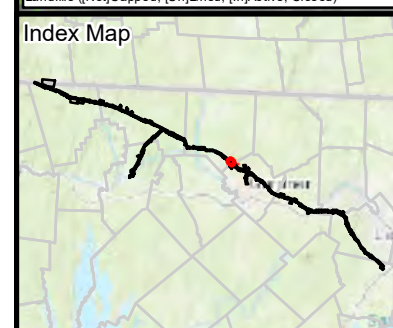
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Legend

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0 50 100 Feet

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A1/B2 ACR PROJECT

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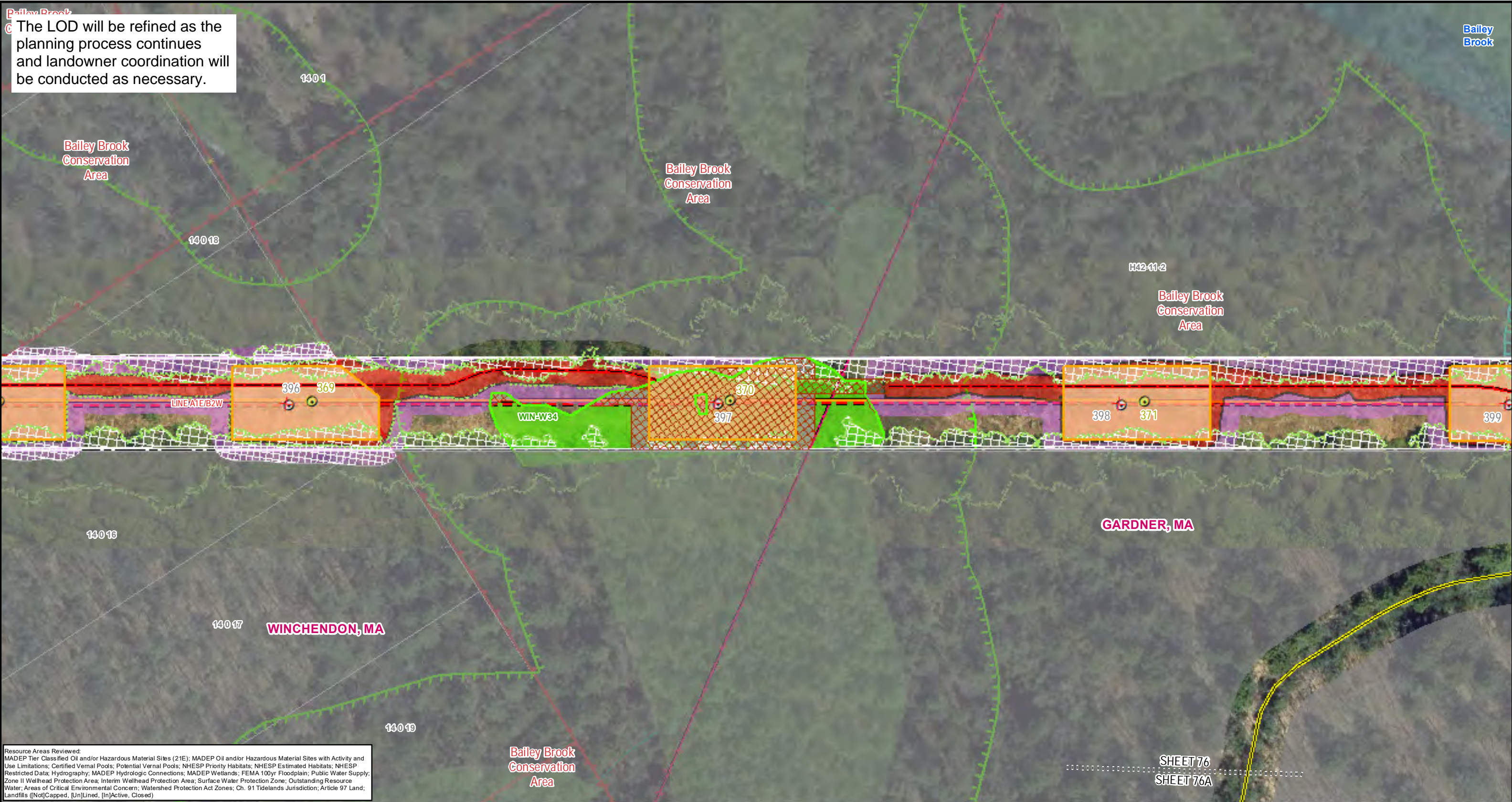
50% Design

September 12, 2022

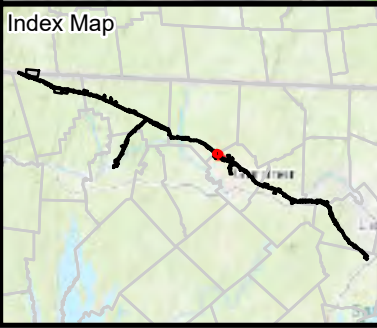
Winchendon, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Resource Areas Reviewed:
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income
<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<p>1 inch = 100 feet</p> <p>0 50 100 Feet</p> <p><i>*Indicates Layers Set to Transparency</i></p>

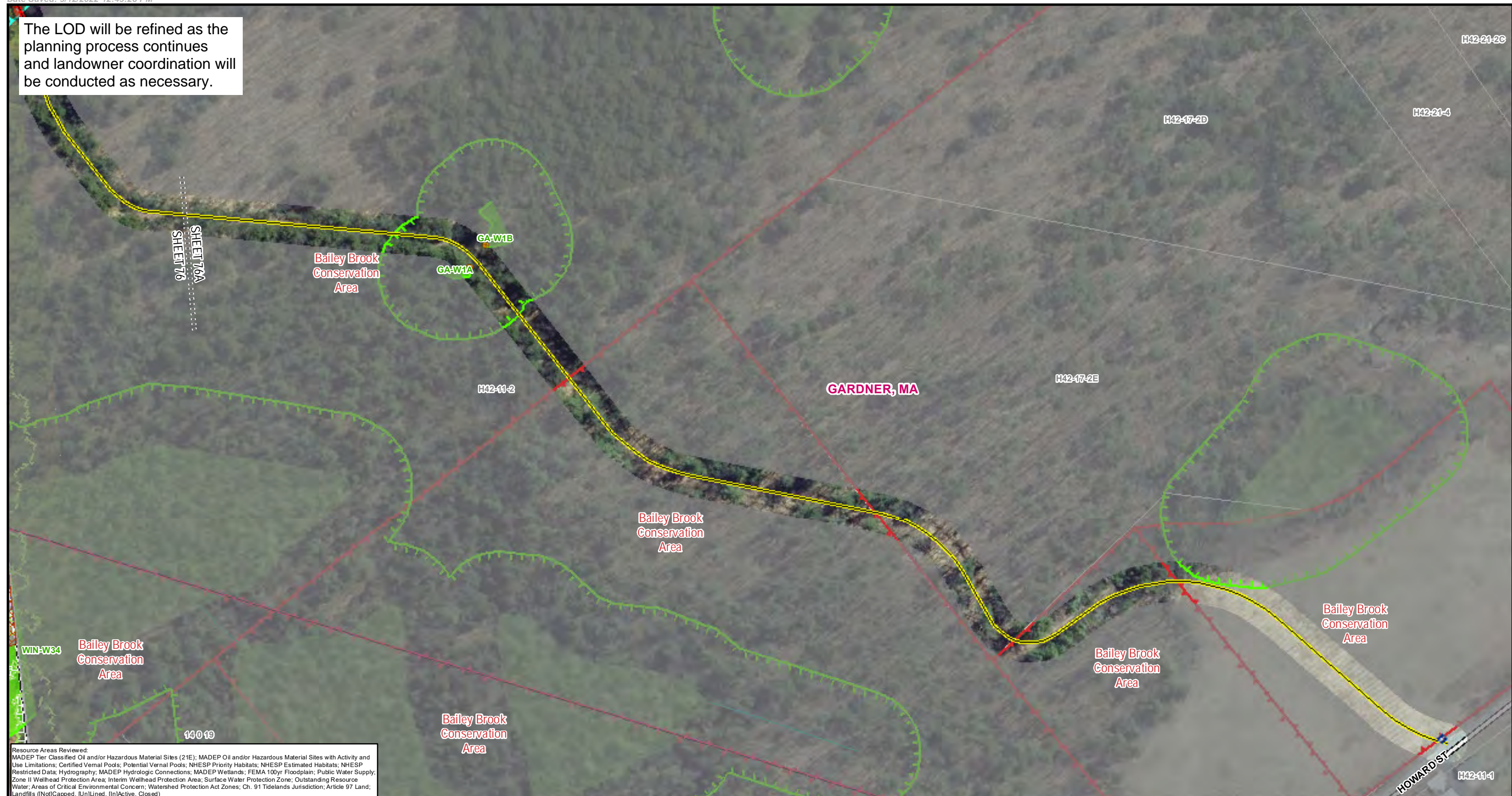
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

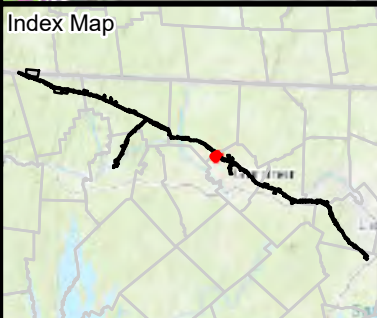
Winchendon & Gardner, MA
 Page 76 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend	
Remove Structure	Designed Road Type 3-5
Install Structure (Concrete Caisson)	Work Envelope
Install Structure (Direct Embed)	Pull Pad
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill
In Kind Direct Embed Structure Replacement	Limit of Disturbance
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall
Reuse Structure	Proposed Tree Removal
General Maintenance	Best Management Practices
Proposed Centerline	Construction Matting
Remove OH Line	Existing Conditions
Standard Road Type 1 & 2	Existing Structure
Existing Access	Other Existing Transmission Centerline
Existing Tree Line	Edge of ROW
Delineated Wetland Edge	Approximate Wetland Edge
Delineated Wetland	Approximate Wetland
Delineated Vernal Pool Extent*	State Streams
Delineated Top of Bank	State Wetlands*
Delineated Stream Centerline	State Open Water*
Delineated Ordinary High Water	100ft Buffer to Wetlands & Streams
Approximate Top of Bank	200ft Riverfront Area
Approximate Ordinary High Water	FEMA 100yr Floodplain*
Approximate Swale	Certified Vernal Pools
Delineated Open Water*	Potential Vernal Pools
Interim Wellhead Protection Area	NHESP Priority & Estimated Habitats
Zone II Wellhead Protection Area	NHESP Restricted Data
Surface Water Protection Zone	Public Water Supply
Outstanding Resource Water	MADEP (21E) Site
MADEP AUL Site	MADEP AUL Site
Railroad	National Grid Property
DCR Trails	Town Boundary
Hiking Trails	State Boundary
Long Distance Trails	Gate
Parcel Boundary	Culvert
Fence	Stonewall
Guardrail	Environmental Justice 2020 Populations
Minority & Income	Minority
Minority	Income
Income	Private

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Figure 2: MEPA General Purpose Plans

50% Design

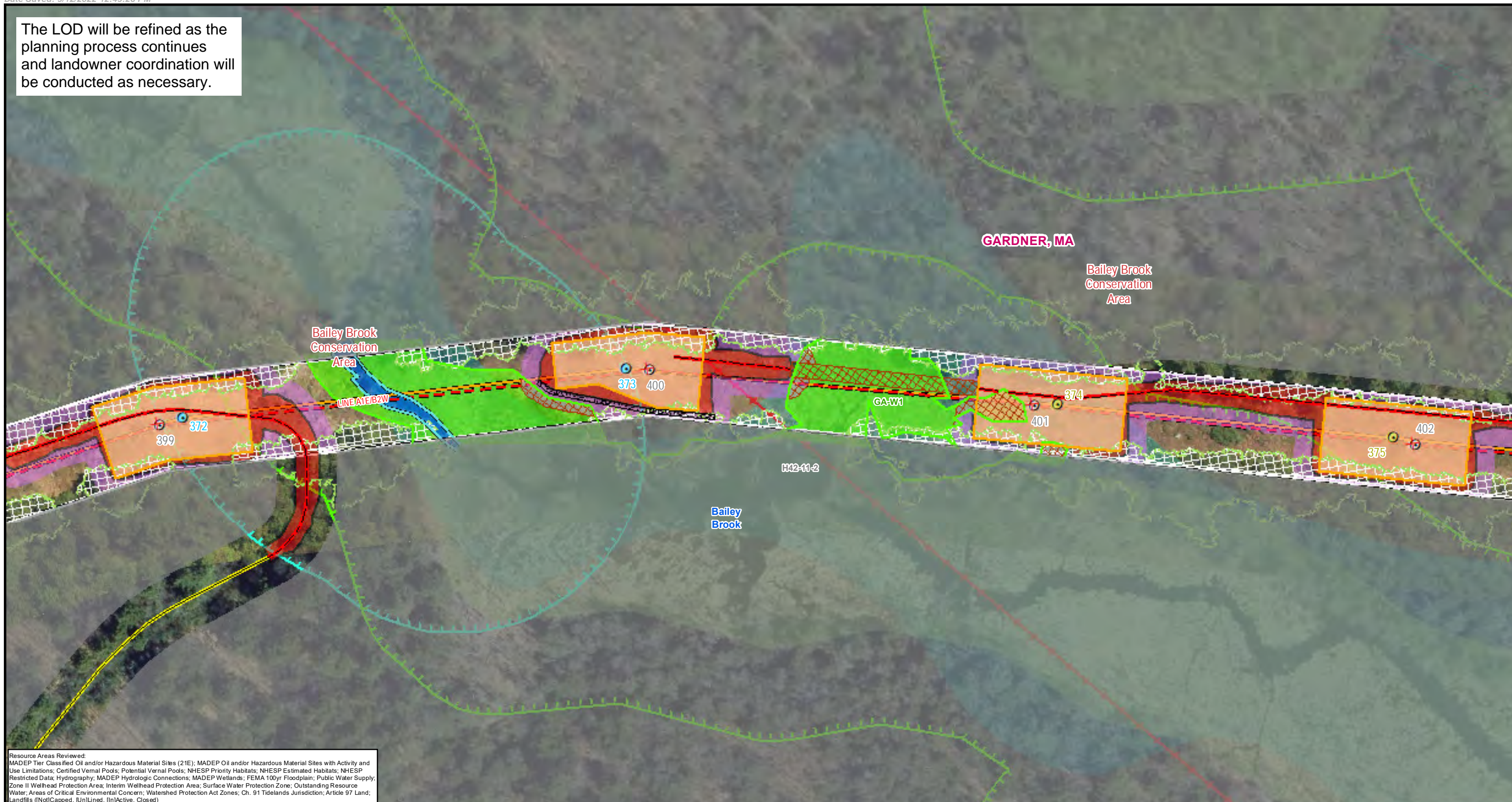
September 12, 2022

Winchendon & Gardner, MA

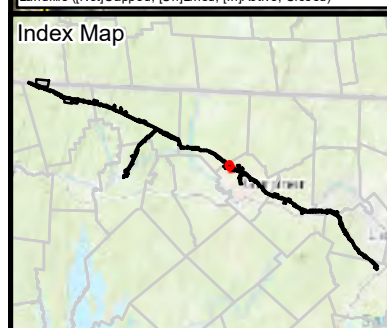
Page 76A of 168

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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Minority
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Income	Income
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Stream Centerline	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Ordinary High Water	200ft Riverfront Area		
General Maintenance	Best Management Practices	Approximate Top of Bank	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Ordinary High Water	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Swale	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Delineated Open Water*	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline		NHESP Restricted Data		
	Edge of ROW				

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Figure 2: MEPA General Purpose Plans

50% Design

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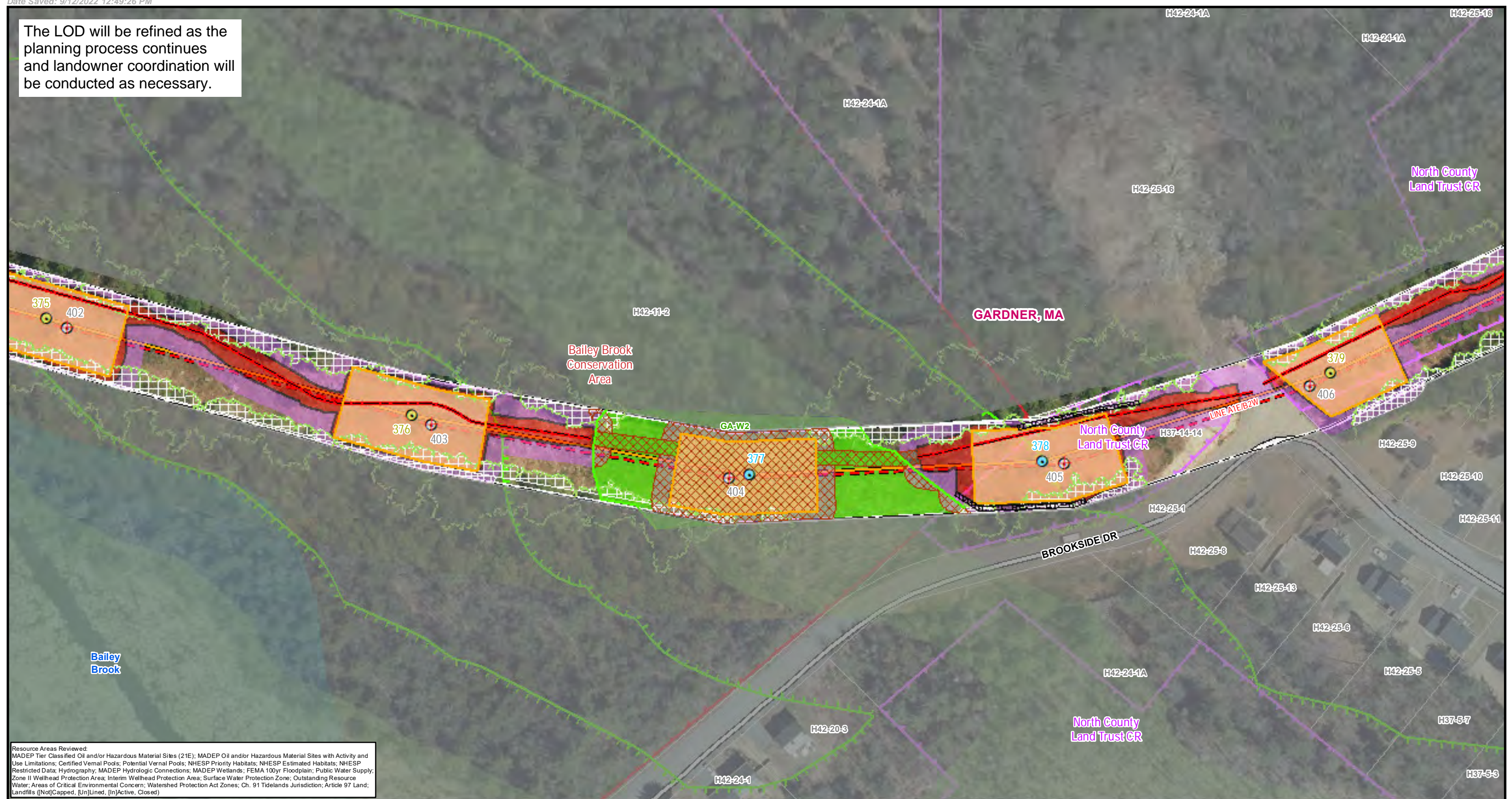
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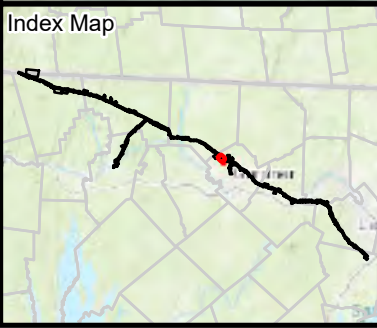
Feet

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Construction Activities	Resource Areas
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A1/B2 ACR PROJECT

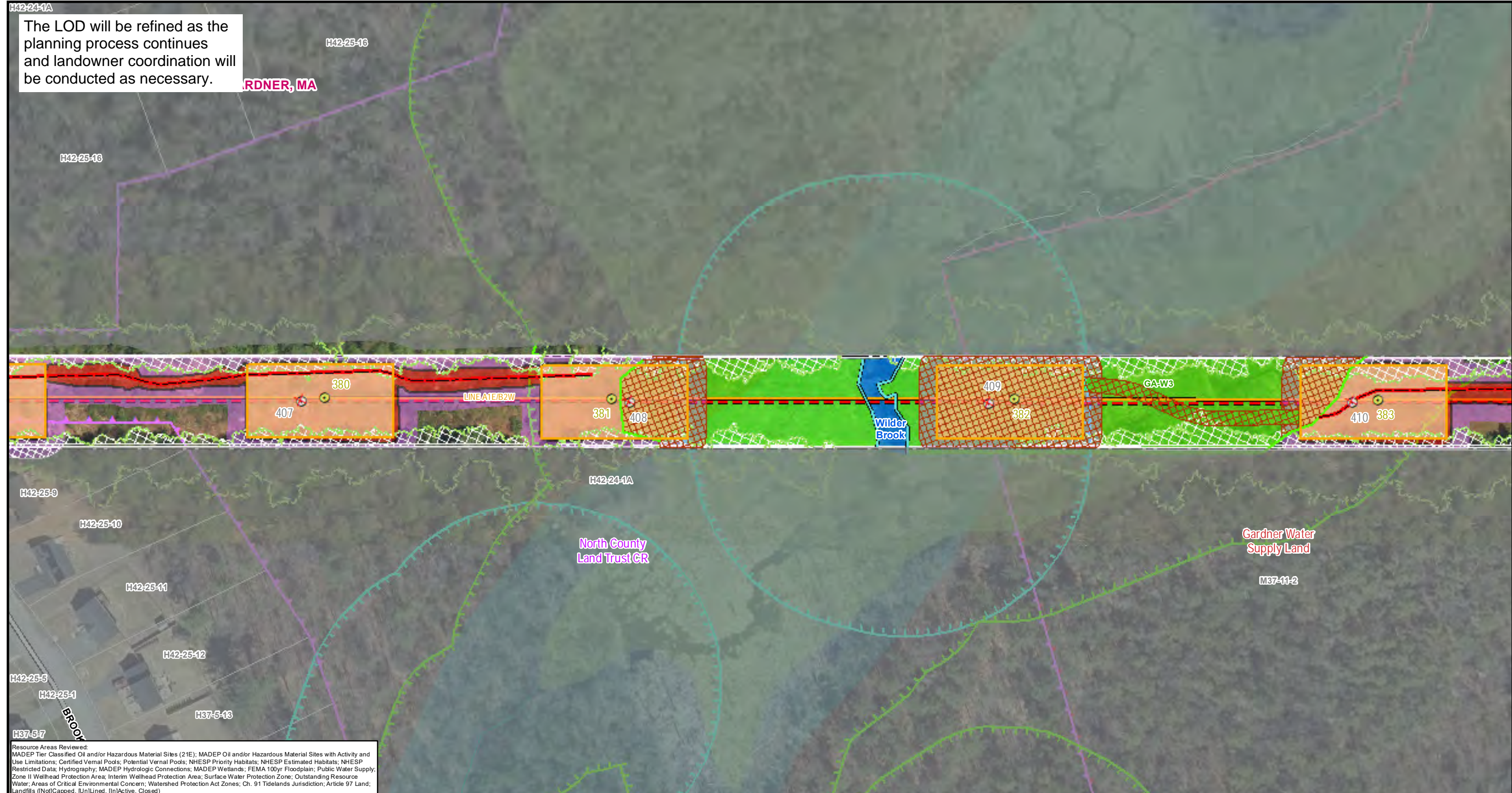
Figure 2: MEPA General Purpose Plans

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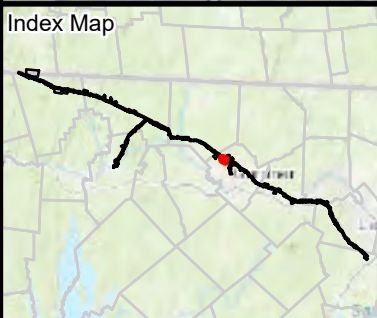
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GARDNER, MA

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Construction Activities		Resource Areas		Interim Wellhead Protection Area		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Interim Wellhead Protection Area	National Grid Property	DCR-State Parks & Recreation	Department of Fish & Game
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Zone II Wellhead Protection Area	Town Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Surface Water Protection Zone	State Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Outstanding Resource Water	Gate	Department of Fish & Game	Department of Fish & Game
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	Public Water Supply	Culvert	Department of Fish & Game	Department of Fish & Game
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Stream Centerline	100ft Buffer to Wetlands & Streams	MADEP (21E) Site	Fence	Department of Fish & Game	Department of Fish & Game
Reuse Structure	Proposed Tree Removal	Delineated Ordinary High Water	200ft Riverfront Area	MADEP AUL Site	Stonewall	Department of Fish & Game	Department of Fish & Game
General Maintenance	Best Management Practices	Approximate Top of Bank	FEMA 100yr Floodplain*	Railroad	Guardrail	Department of Fish & Game	Department of Fish & Game
Proposed Centerline	Construction Matting	Approximate Ordinary High Water	Certified Vernal Pools	Hiking Trails	Environmental Justice 2020 Populations	Department of Fish & Game	Department of Fish & Game
Remove OH Line	Existing Conditions	Approximate Swale	Potential Vernal Pools	Long Distance Trails	Minority & Income	Department of Fish & Game	Department of Fish & Game
Standard Road Type 1 & 2	Existing Structure	Delineated Open Water*	NHESP Priority & Estimated Habitats	Parcel Boundary	Minority	Department of Fish & Game	Department of Fish & Game
	Other Existing Transmission Centerline		NHESP Restricted Data		Income	Department of Fish & Game	Department of Fish & Game
	Edge of ROW					Department of Fish & Game	Department of Fish & Game

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Figure 2: MEPA General Purpose Plans

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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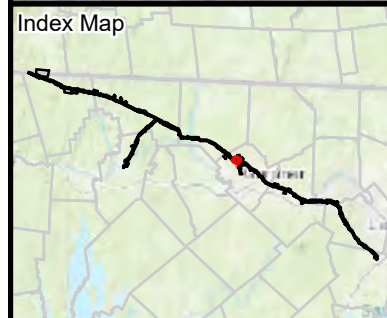
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Land Trust



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Construction Activities	Resource Areas
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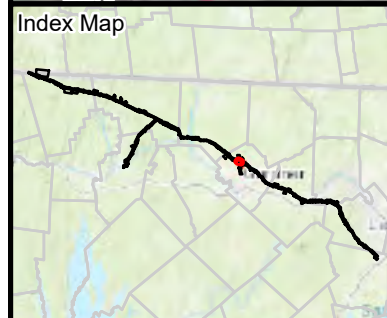
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	National Grid Property	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Town Boundary	Minority
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Municipal	Income
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Private	
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Stream Centerline	100ft Buffer to Wetlands & Streams		
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General Maintenance	Best Management Practices	Approximate Top of Bank	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Ordinary High Water	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Swale	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Delineated Open Water*	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline		NHESP Restricted Data		
	Edge of ROW				

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Figure 2: MEPA General Purpose Plans

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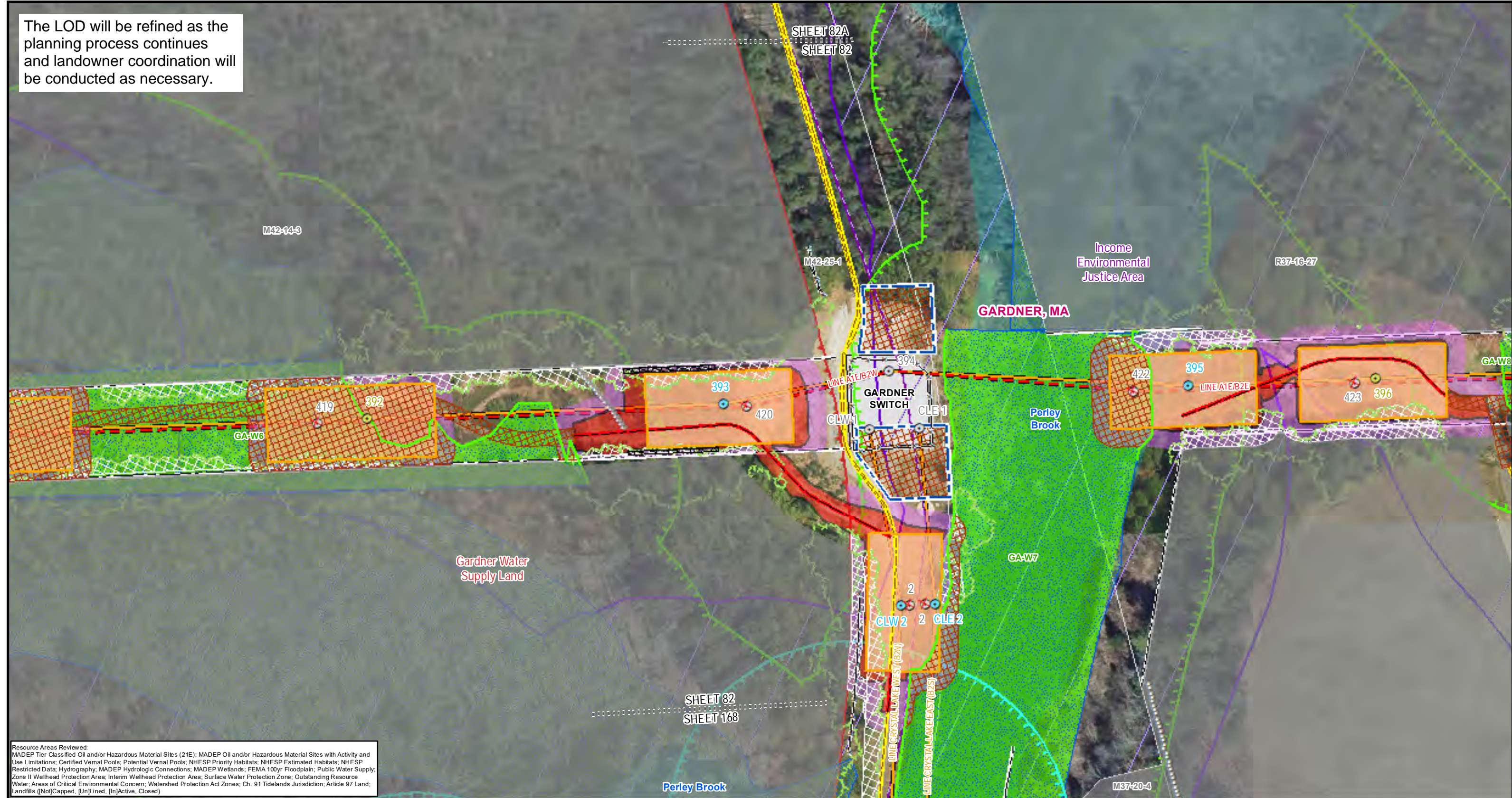
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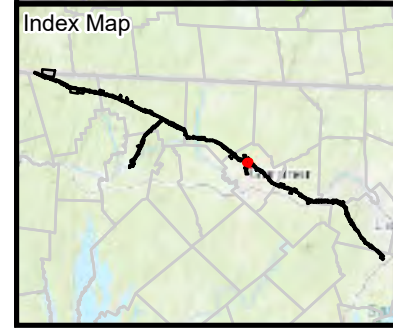
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Best Management Practices	Existing Conditions
<ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting 	<ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Edge of ROW
Construction Activities	Resource Areas
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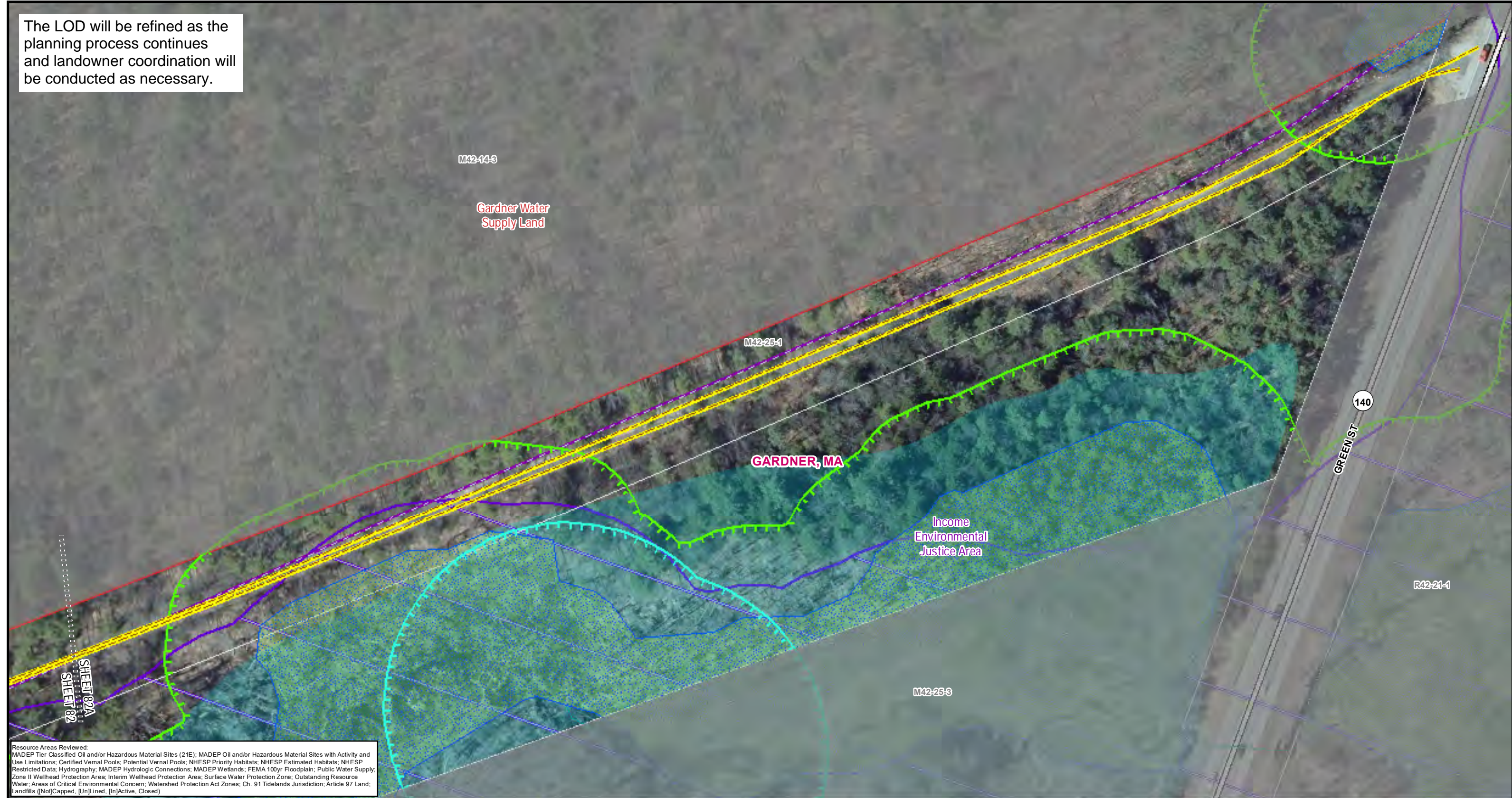
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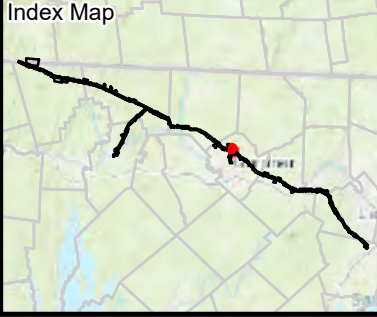
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
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<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<p>1 inch = 100 feet</p> <p>0 50 100 Feet</p> <p>*Indicates Layers Set to Transparency</p>

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
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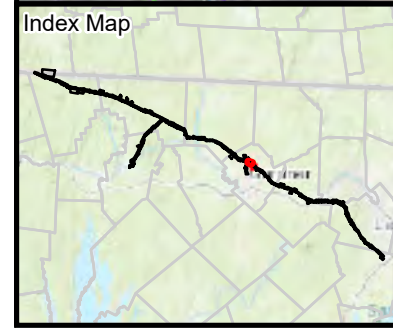
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Income
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams		
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

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Figure 2: MEPA General Purpose Plans

50% Design

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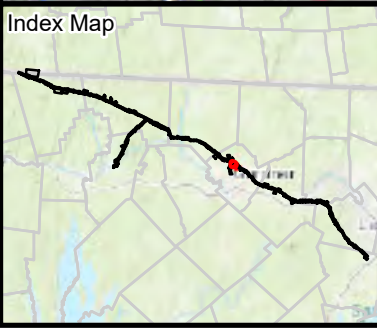
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A1/B2 ACR PROJECT

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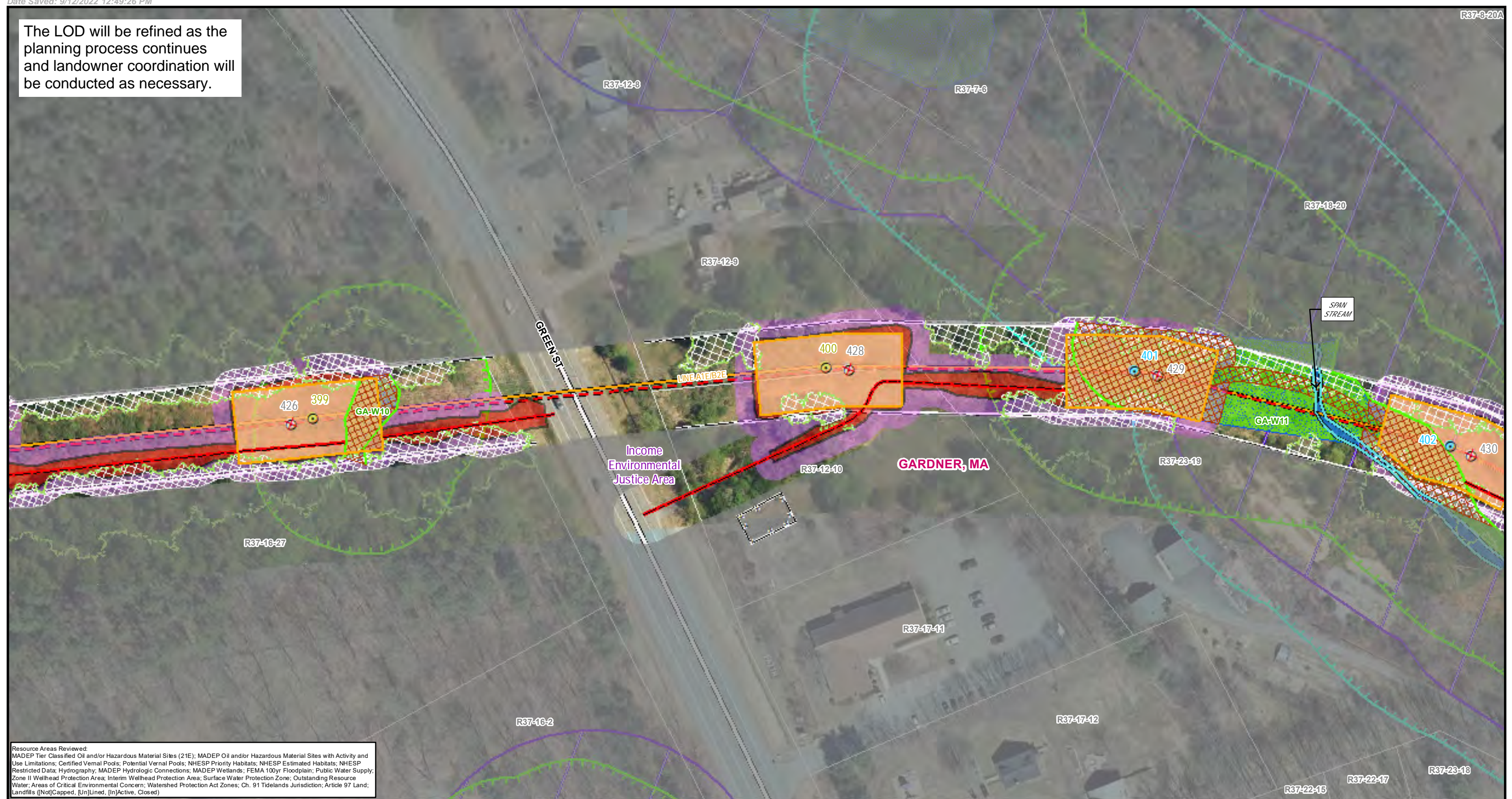
September 12, 2022

Gardner, MA

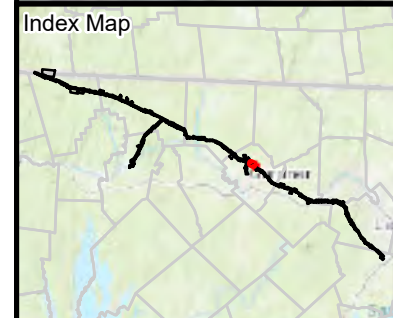
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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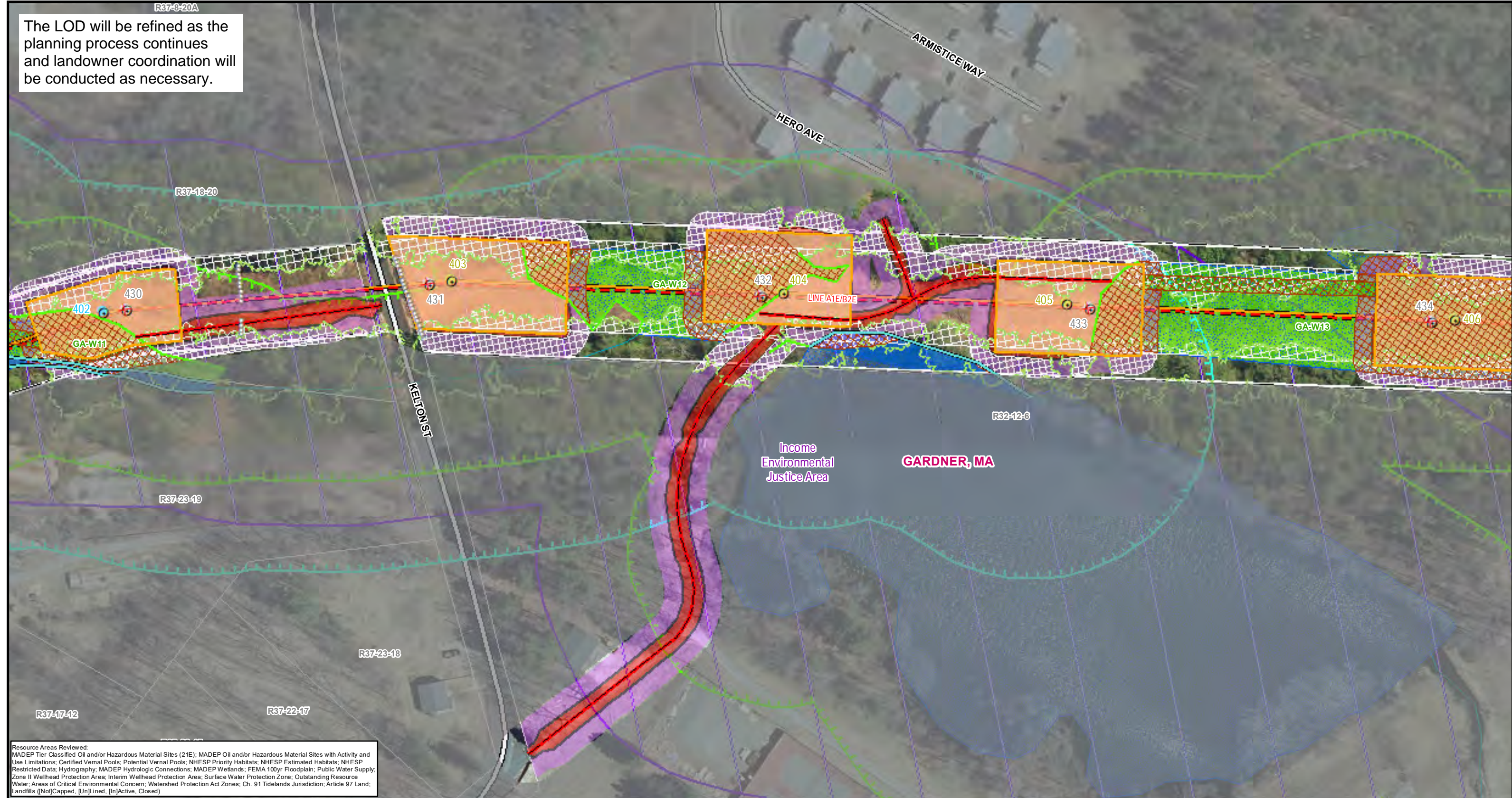
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

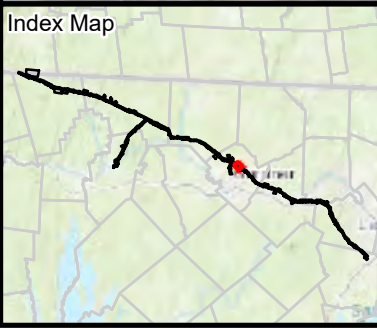
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities	Resource Areas
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Best Management Practices	Existing Conditions
<ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting 	<ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Edge of ROW
Article 97 Lands	Environmental Justice 2020 Populations
<ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<ul style="list-style-type: none"> Minority & Income Minority Income

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Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

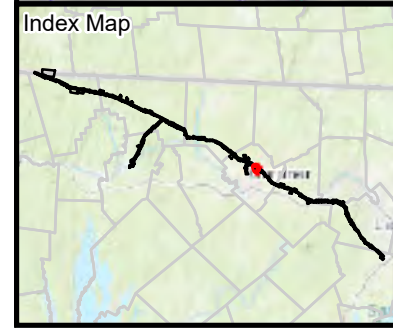
Gardner, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	

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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
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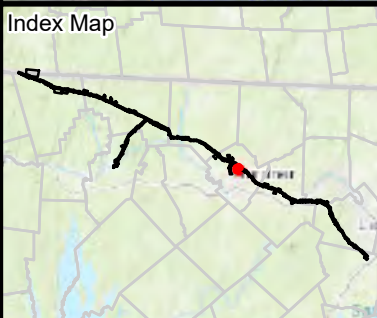
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 Page 86 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Income
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams		
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

A1/B2 ACR PROJECT

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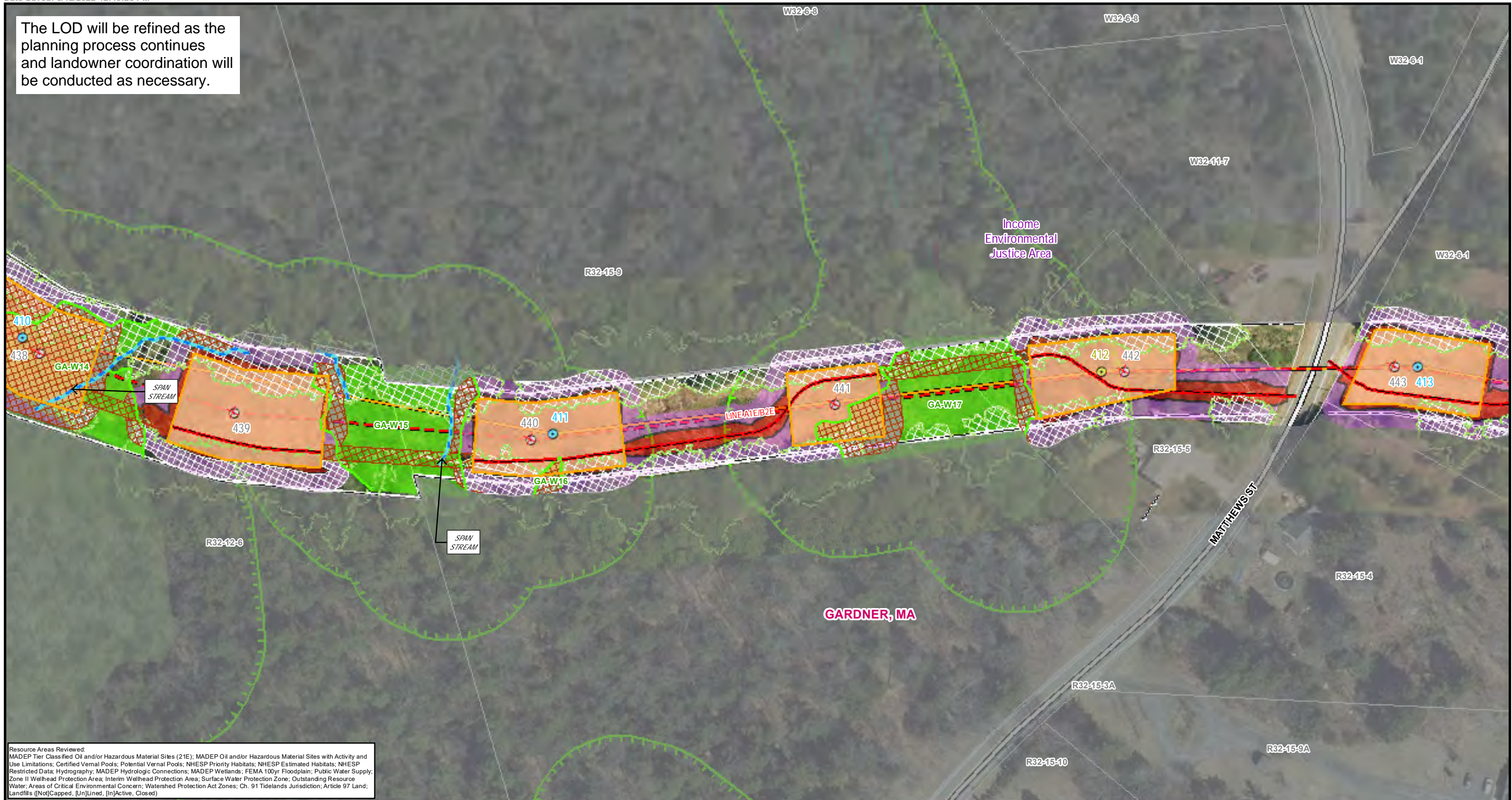
September 12, 2022

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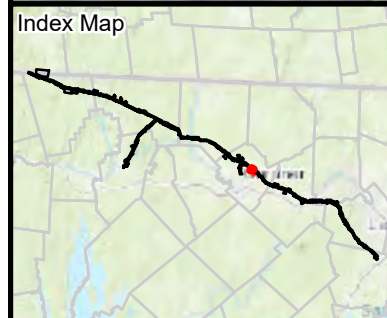
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Legend		Resource Areas		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	National Grid Property	DCR-State Parks & Recreation
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Town Boundary	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	State Streams	State Wetlands*	State Boundary	Land Trust
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland Edge	State Open Water*	Gate	Municipal
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Wetland	100ft Buffer to Wetlands & Streams	Culvert	Private
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Vernal Pool Extent*	200ft Riverfront Area	Fence	
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	FEMA 100yr Floodplain*	Stonewall	
General Maintenance	Construction Matting	Delineated Ordinary High Water	Certified Vernal Pools	Guardrail	
Proposed Centerline	Best Management Practices	Delineated Top of Bank	Potential Vernal Pools	Railroad	
Remove OH Line	Construction Matting	Approximate Top of Bank	NHESP Priority & Estimated Habitats	Hiking Trails	
Standard Road Type 1 & 2	Existing Conditions	Approximate Ordinary High Water	NHESP Restricted Data	Long Distance Trails	
	Existing Structure	Approximate Swale		Parcel Boundary	
	Other Existing Transmission Centerline	Delineated Open Water*			
	Edge of ROW				

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Figure 2: MEPA General Purpose Plans
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 September 12, 2022

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1 inch = 100 feet
 0 50 100
 Feet

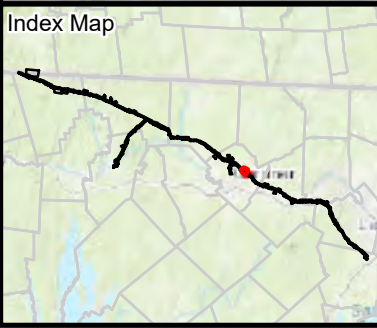
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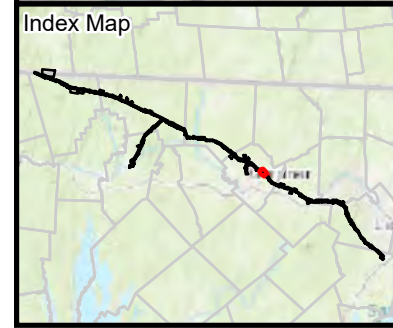
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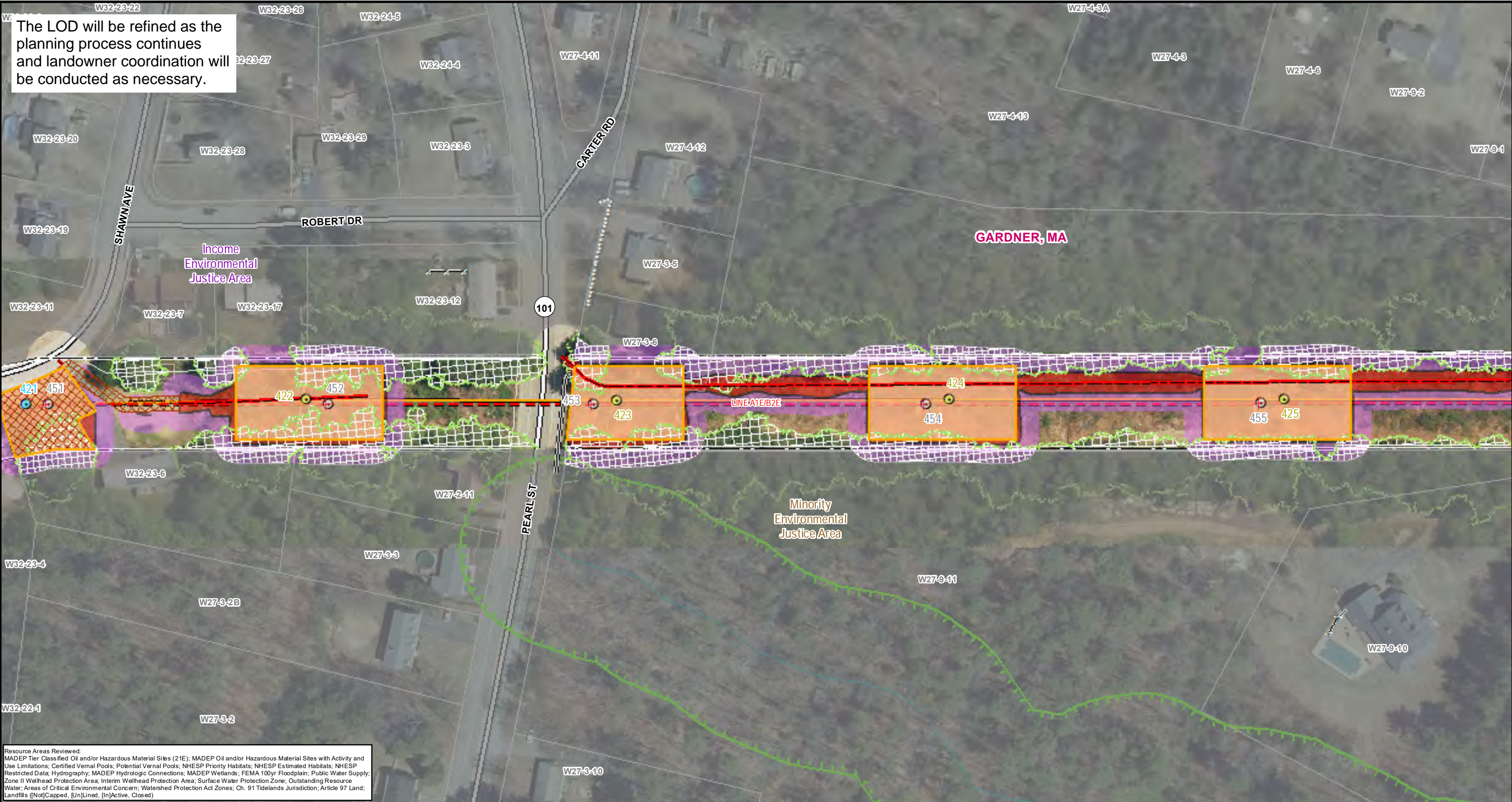
Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
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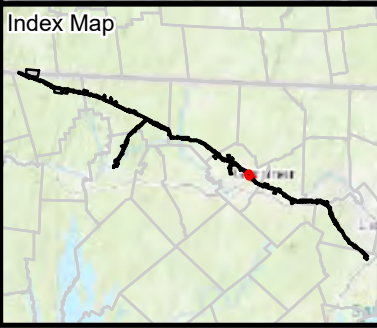
A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

Gardner, MA
 Page 89 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

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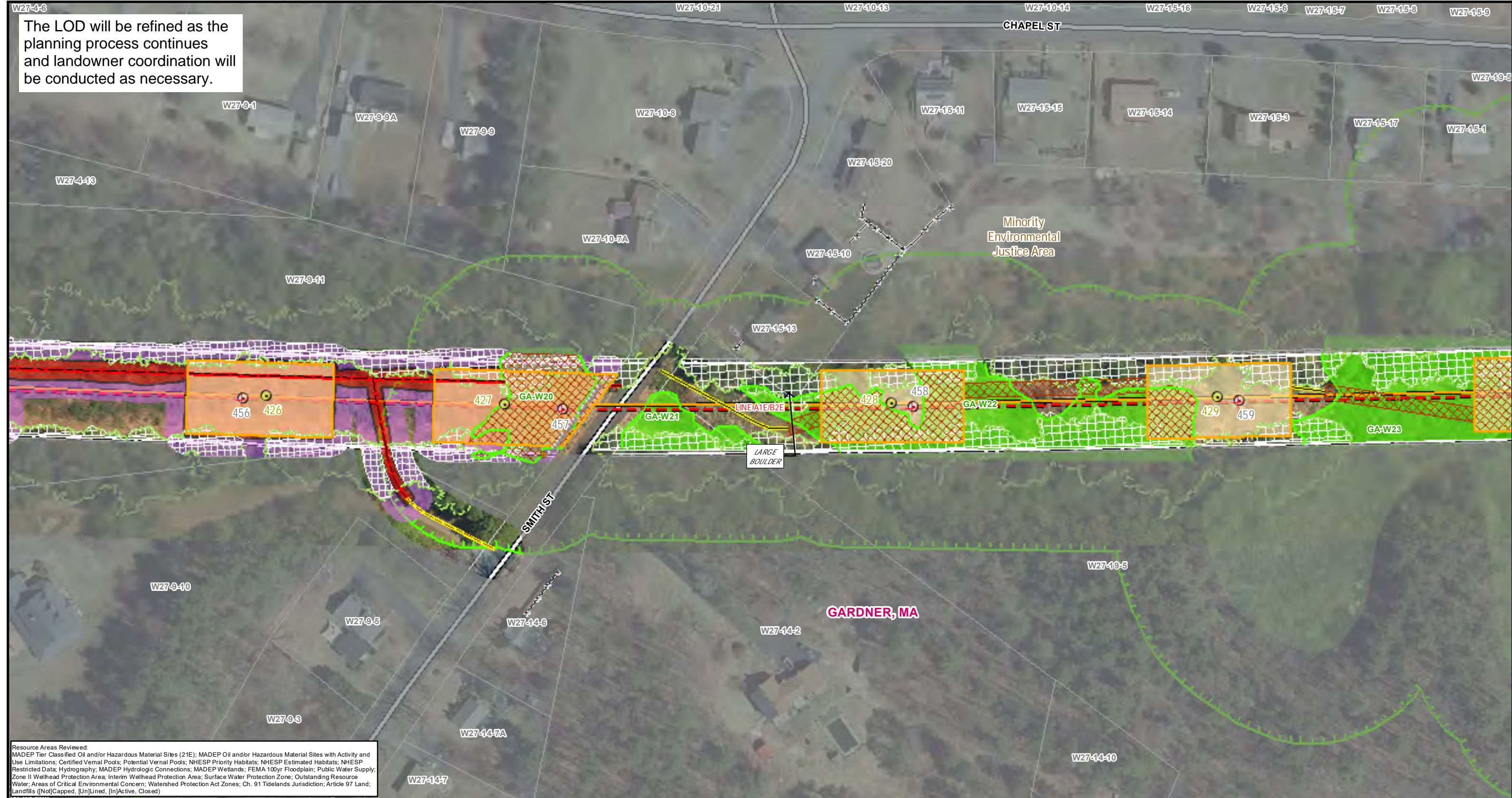
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

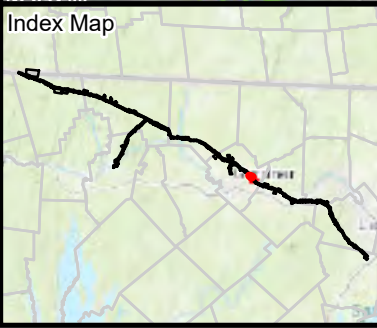
Gardner, MA
Page 90 of 168

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Construction Activities		Resource Areas		Existing Conditions		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Proposed Centerline	Remove OH Line	Standard Road Type 1 & 2	Proposed Retaining Wall
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	In Kind Direct Embed Structure Replacement	Proposed Retaining Wall	Proposed Tree Removal	Proposed Tree Removal
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	In Kind Structure on Concrete Caisson Replacement	Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Reuse Structure	Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	General Maintenance	Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Stream Centerline	100ft Buffer to Wetlands & Streams	Proposed Centerline	Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
Reuse Structure	Proposed Retaining Wall	Delineated Ordinary High Water	200ft Riverfront Area	Remove OH Line	Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
Other Existing Transmission Centerline	Proposed Retaining Wall	Approximate Top of Bank	FEMA 100yr Floodplain*	Standard Road Type 1 & 2	Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
Edge of ROW	Proposed Retaining Wall	Approximate Ordinary High Water	Certified Vernal Pools		Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
	Proposed Retaining Wall	Delineated Open Water*	Potential Vernal Pools		Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
	Proposed Retaining Wall		NHESP Priority & Estimated Habitats		Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
	Proposed Retaining Wall		NHESP Restricted Data		Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal
	Proposed Retaining Wall				Limit of Disturbance	Proposed Retaining Wall	Proposed Tree Removal

A1/B2 ACR PROJECT

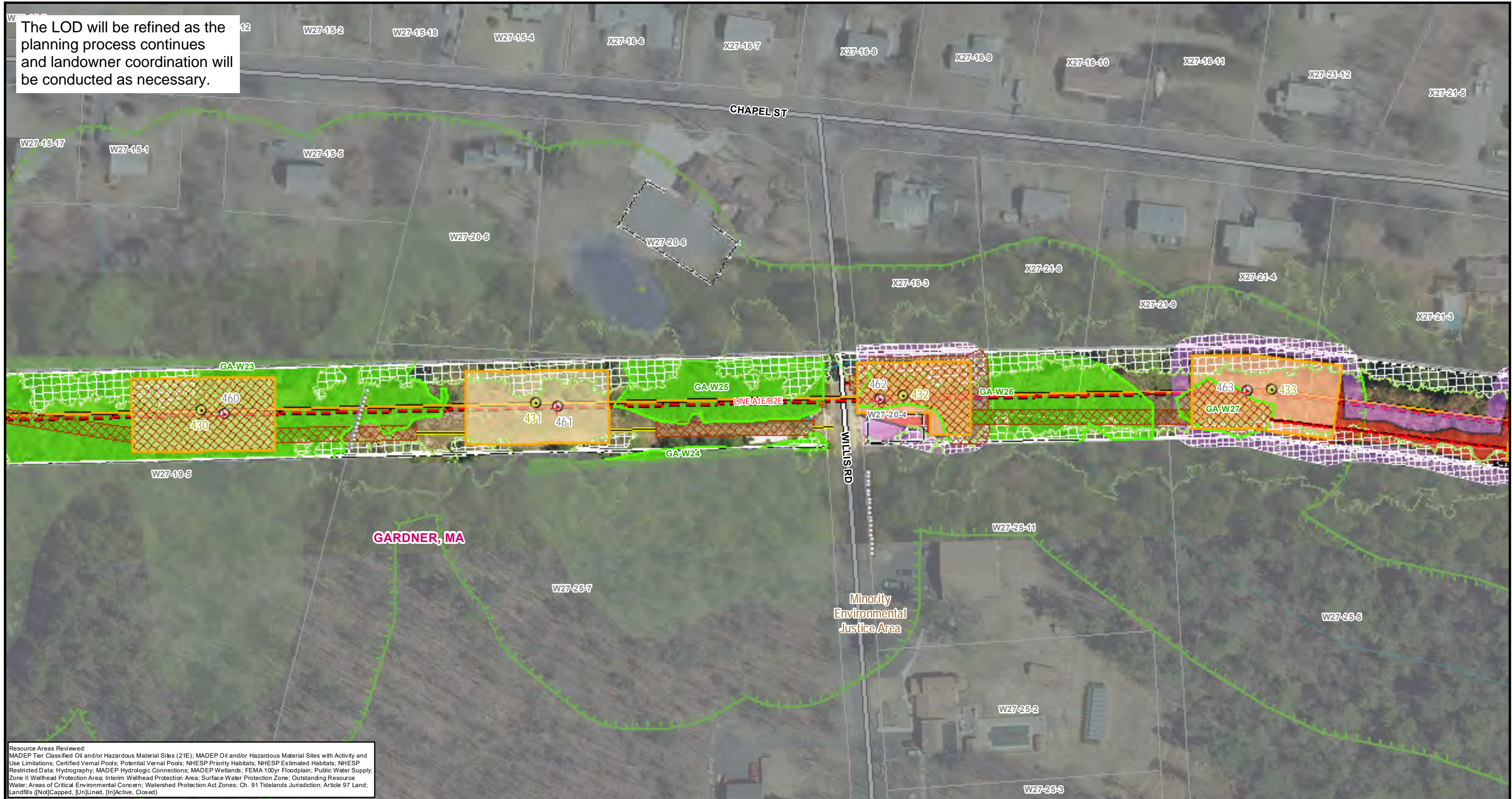
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50% Design September 12, 2022

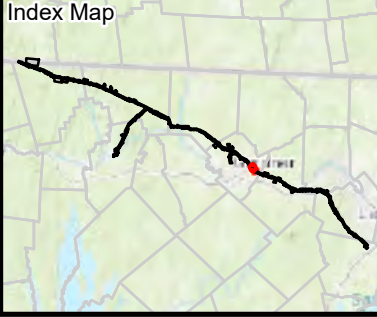
Gardner, MA
Page 91 of 168

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Legend	
Construction Activities	Designed Road Type 3-5
Remove Structure	Work Envelope
Install Structure (Concrete Caisson)	Pull Pad
Install Structure (Direct Embed)	Limit of Cut/Fill
Install Structure (Vertical Jumper Switch)	Limit of Disturbance
In Kind Direct Embed Structure Replacement	Proposed Retaining Wall
In Kind Structure on Concrete Caisson Replacement	Proposed Tree Removal
Reuse Structure	Best Management Practices
General Maintenance	Construction Matting
Proposed Centerline	Existing Conditions
Remove OH Line	Existing Structure
Standard Road Type 1 & 2	Other Existing Transmission Centerline
Existing Access	Edge of ROW
Existing Tree Line	Approximate Wetland Edge
Delineated Wetland Edge	Approximate Wetland
Delineated Wetland	State Streams
Delineated Vernal Pool Extent*	State Wetlands*
Delineated Top of Bank	State Open Water*
Delineated Stream Centerline	100ft Buffer to Wetlands & Streams
Delineated Ordinary High Water	200ft Riverfront Area
Approximate Top of Bank	FEMA 100yr Floodplain*
Approximate Ordinary High Water	Certified Vernal Pools
Approximate Swale	Potential Vernal Pools
Delineated Open Water*	NHESP Priority & Estimated Habitats
Interim Wellhead Protection Area	NHESP Restricted Data
Zone II Wellhead Protection Area	National Grid Property
Surface Water Protection Zone	Town Boundary
Outstanding Resource Water	State Boundary
Public Water Supply	Gate
MADEP (21E) Site	Culvert
MADEP AUL Site	Fence
Railroad	Stonewall
DCR Trails	Guardrail
Hiking Trails	Environmental Justice 2020 Populations
Long Distance Trails	Minority & Income
Parcel Boundary	Minority
National Grid Property	Income

A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
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Gardner, MA
 Page 92 of 168

1 inch = 100 feet
 0 50 100
 Feet

**Indicates Layers Set to Transparency*

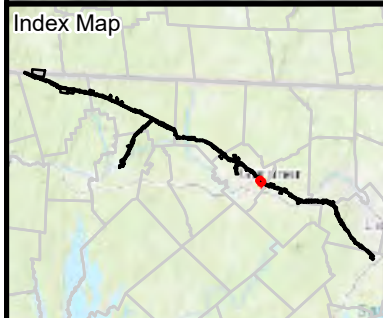
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

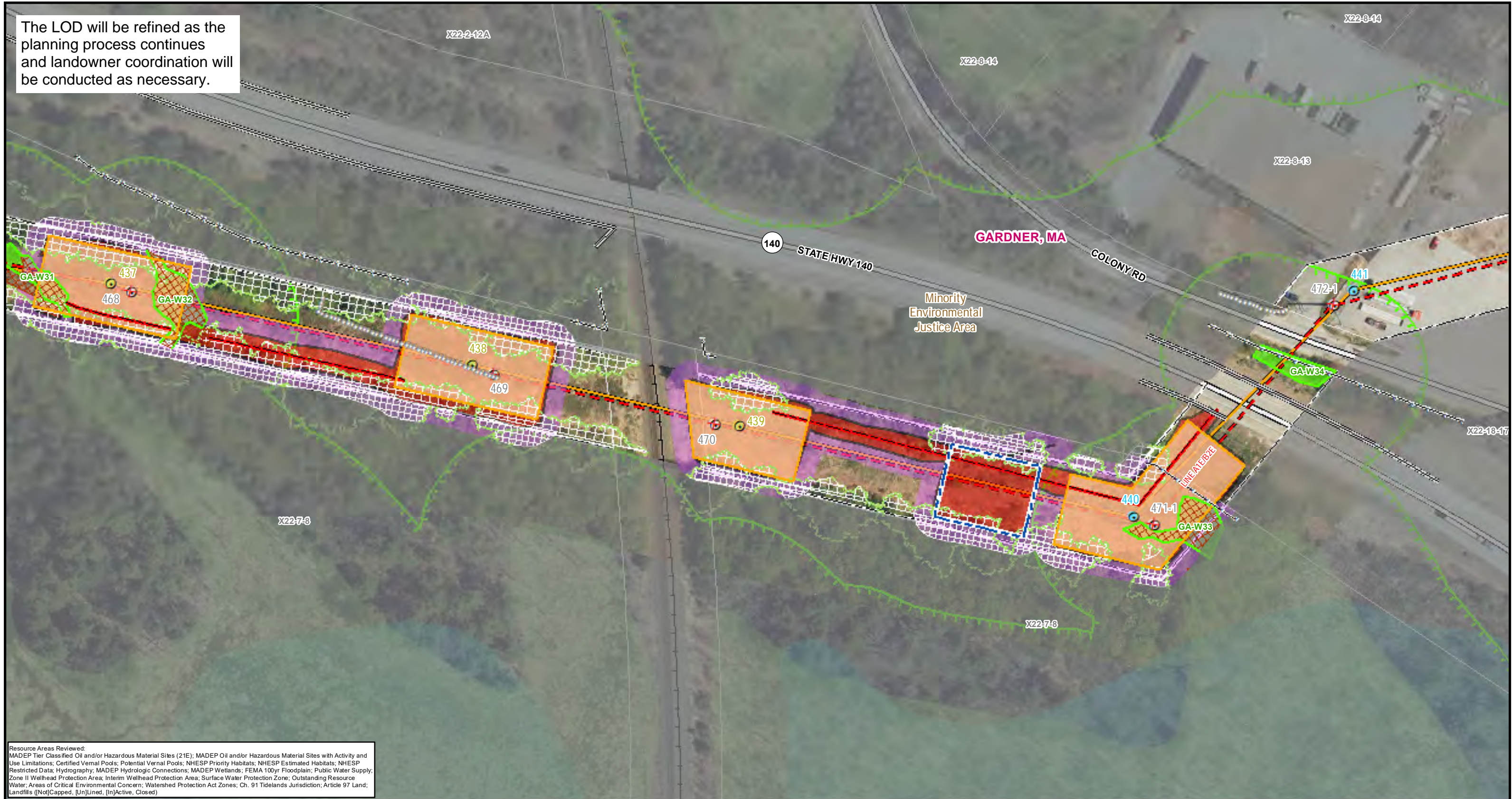
50% Design

September 12, 2022

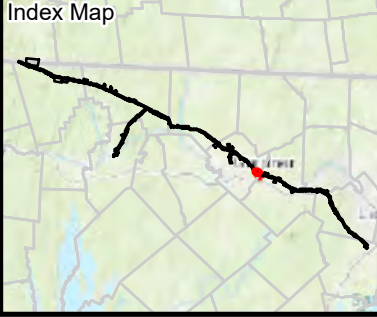
Gardner, MA
Page 93 of 168

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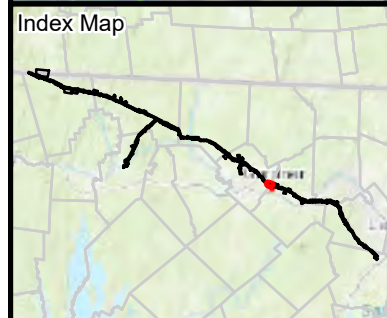
Gardner, MA
 Page 94 of 168

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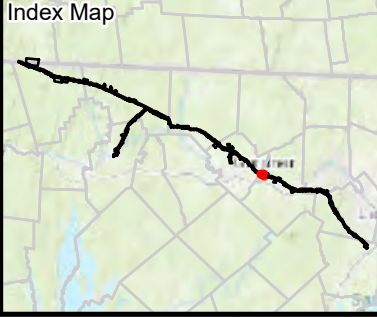
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 Page 95 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Install Structure (Direct Embed)	Limit of Cut/Fill	State Wetlands*	Surface Water Protection Zone	Income	State Boundary
Install Structure (Vertical Jumper Switch)	Limit of Disturbance	State Open Water*	Outstanding Resource Water	Public Water Supply	Gate
In Kind Direct Embed Structure Replacement	Proposed Retaining Wall	100ft Buffer to Wetlands & Streams	Public Water Supply	MADEP (21E) Site	Culvert
In Kind Structure on Concrete Caisson Replacement	Proposed Tree Removal	200ft Riverfront Area	MADEP AUL Site	Fence	Stonewall
Reuse Structure	Best Management Practices - Construction Matting	FEMA 100yr Floodplain*	Railroad	Guardrail	Gate
General Maintenance	Best Management Practices - Edge of ROW	Certified Vernal Pools	Hiking Trails	Fence	Culvert
Proposed Centerline	Existing Structure	Potential Vernal Pools	DCR Trails	Stonewall	Culvert
Remove OH Line	Other Existing Transmission Centerline	NHESP Priority & Estimated Habitats	Long Distance Trails	Stonewall	Culvert
Standard Road Type 1 & 2	Edge of ROW	NHESP Restricted Data	Parcel Boundary	Stonewall	Culvert

A1/B2 ACR PROJECT

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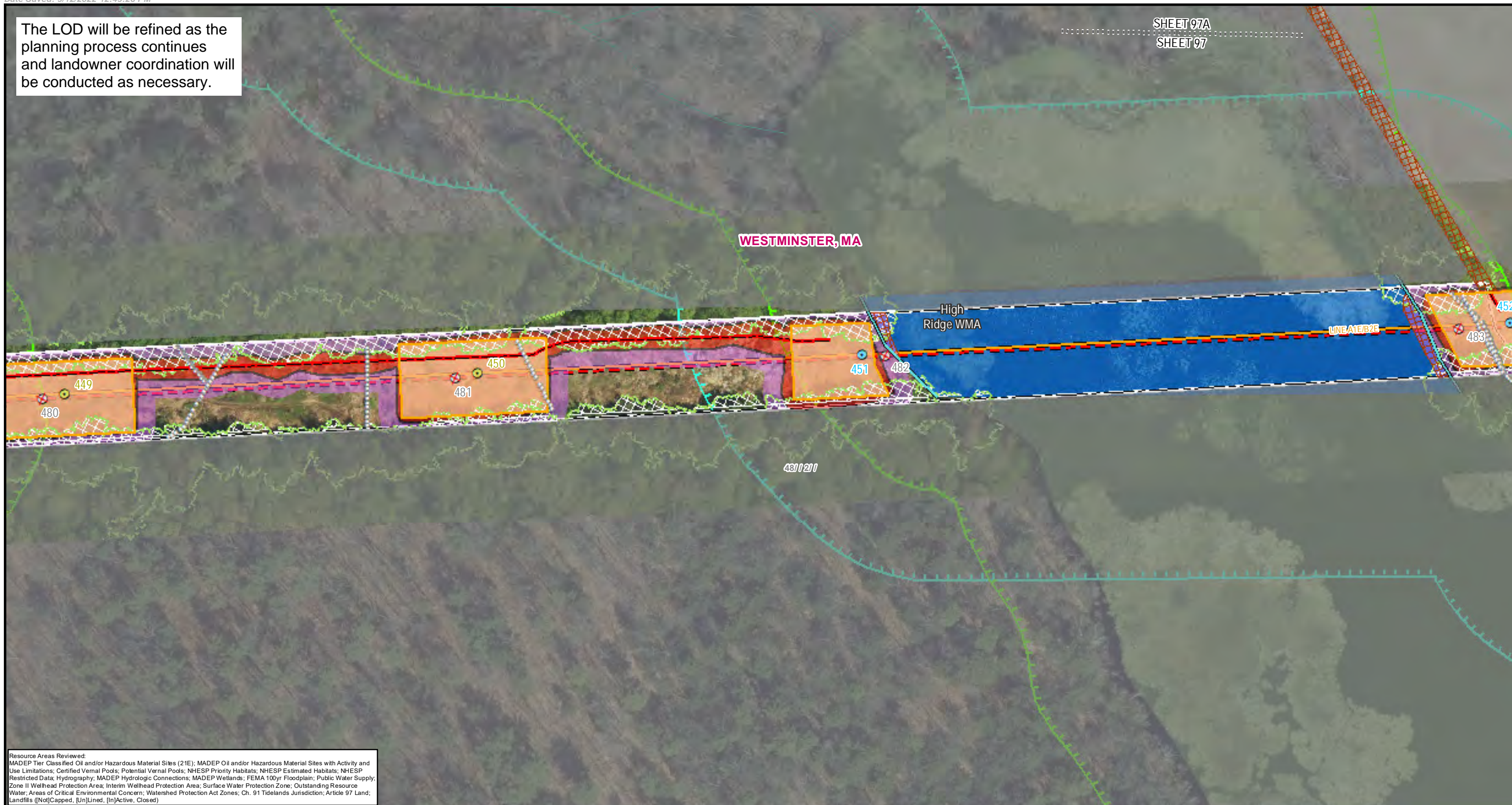
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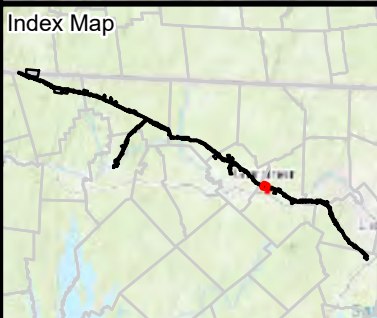
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 SHEET 97



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Legend	
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<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Approximate Swale Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
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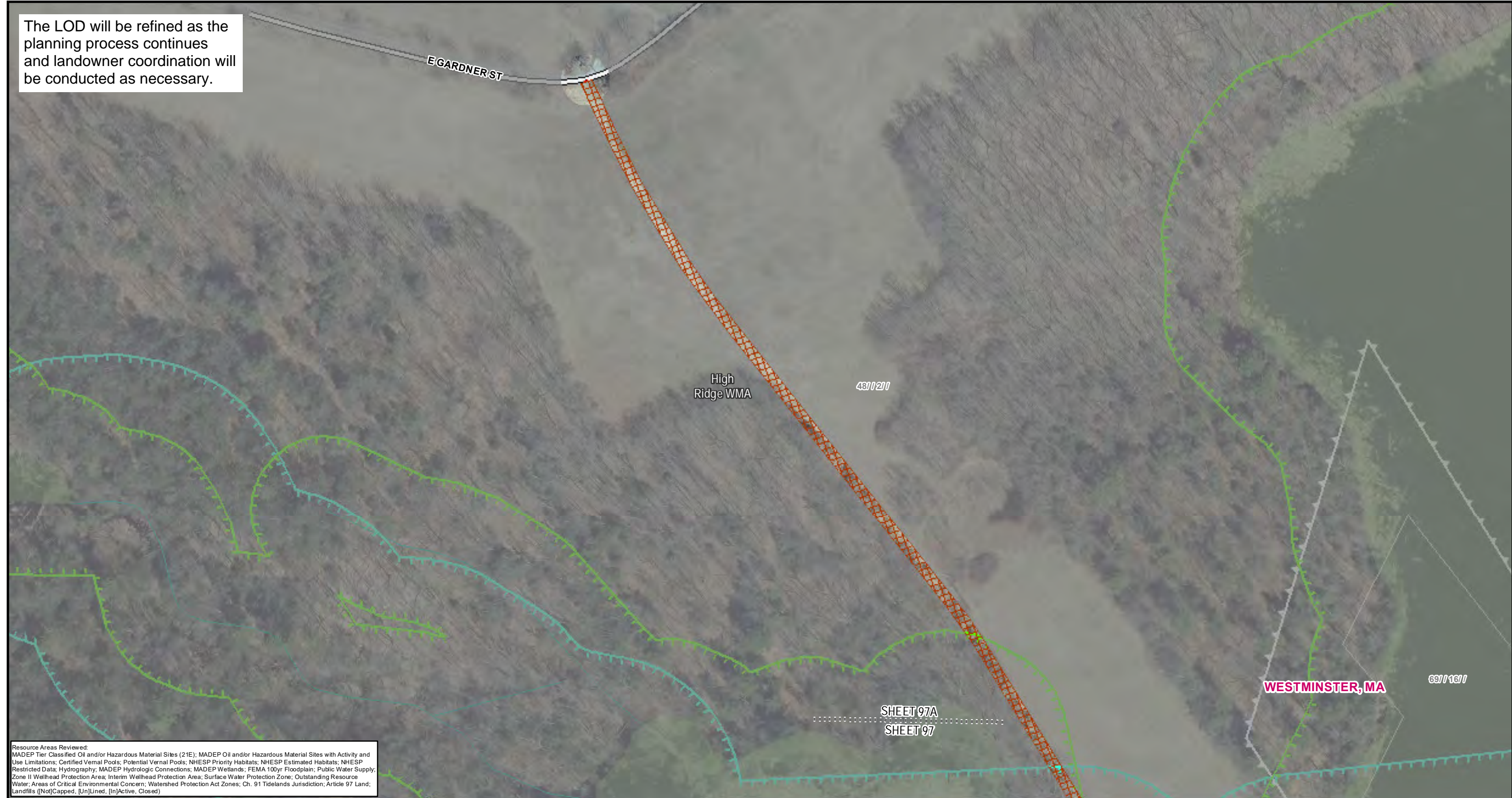
Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

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 Page 97 of 168

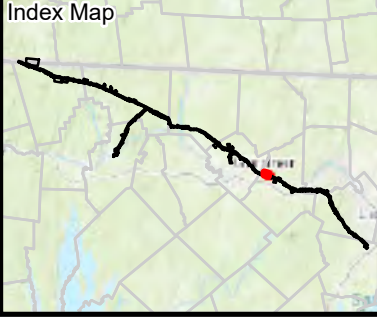
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Work Envelope	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Minority
Install Structure (Concrete Caisson)	Pull Pad	Delineated Wetland Edge	State Streams	Income	Income
Install Structure (Direct Embed)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
Install Structure (Vertical Jumper Switch)	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Direct Embed Structure Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
In Kind Structure on Concrete Caisson Replacement	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
Reuse Structure	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
General Maintenance	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Proposed Centerline	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Remove OH Line	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
Standard Road Type 1 & 2	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

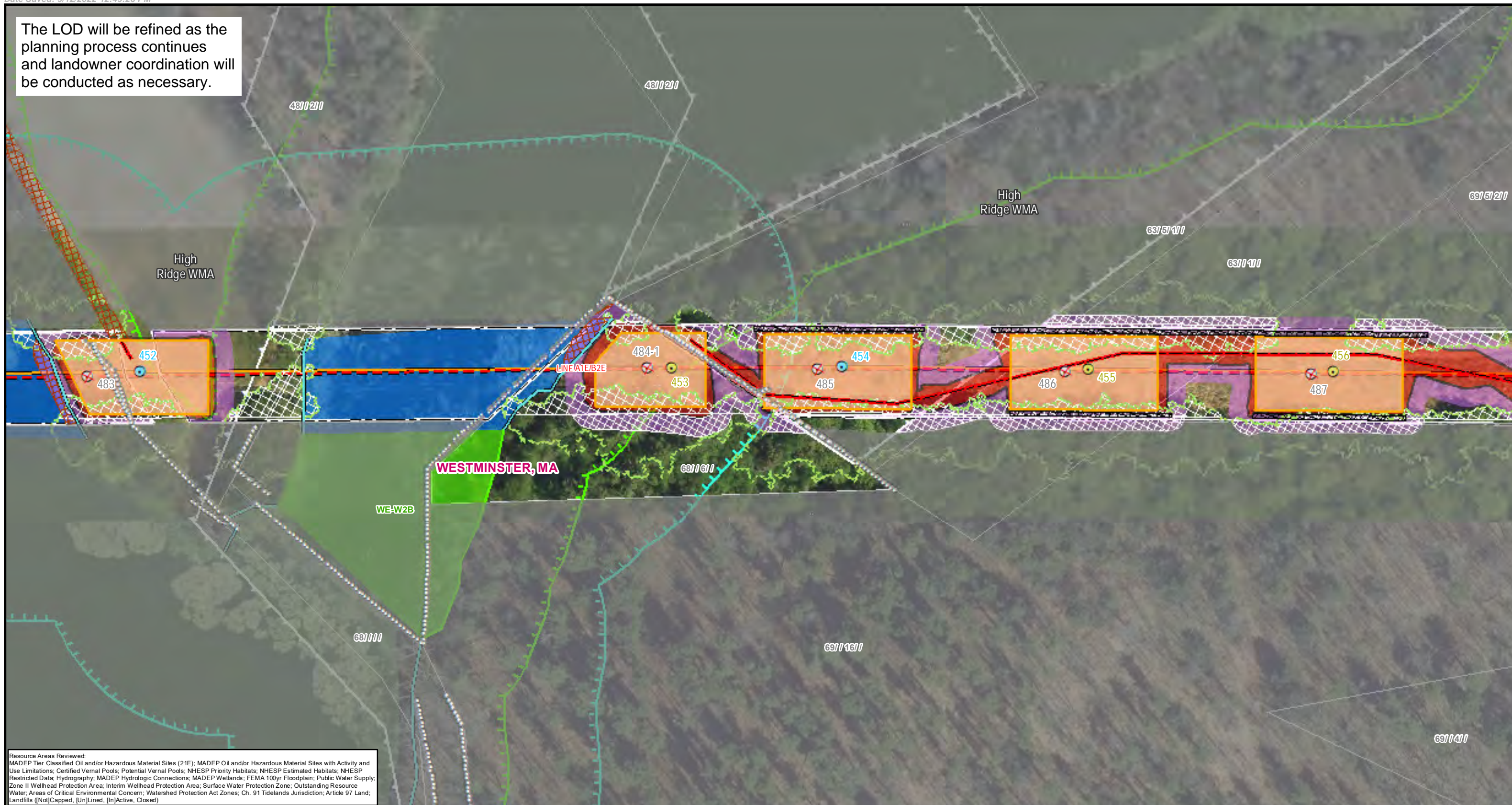
A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
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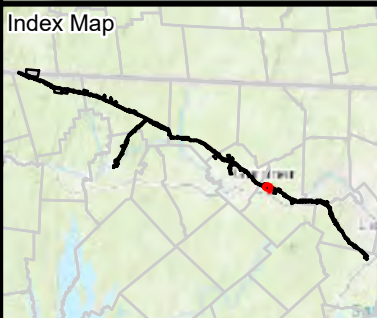
Westminister, MA
 Page 97A of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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A1/B2 ACR PROJECT
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**Indicates Layers Set to Transparency*

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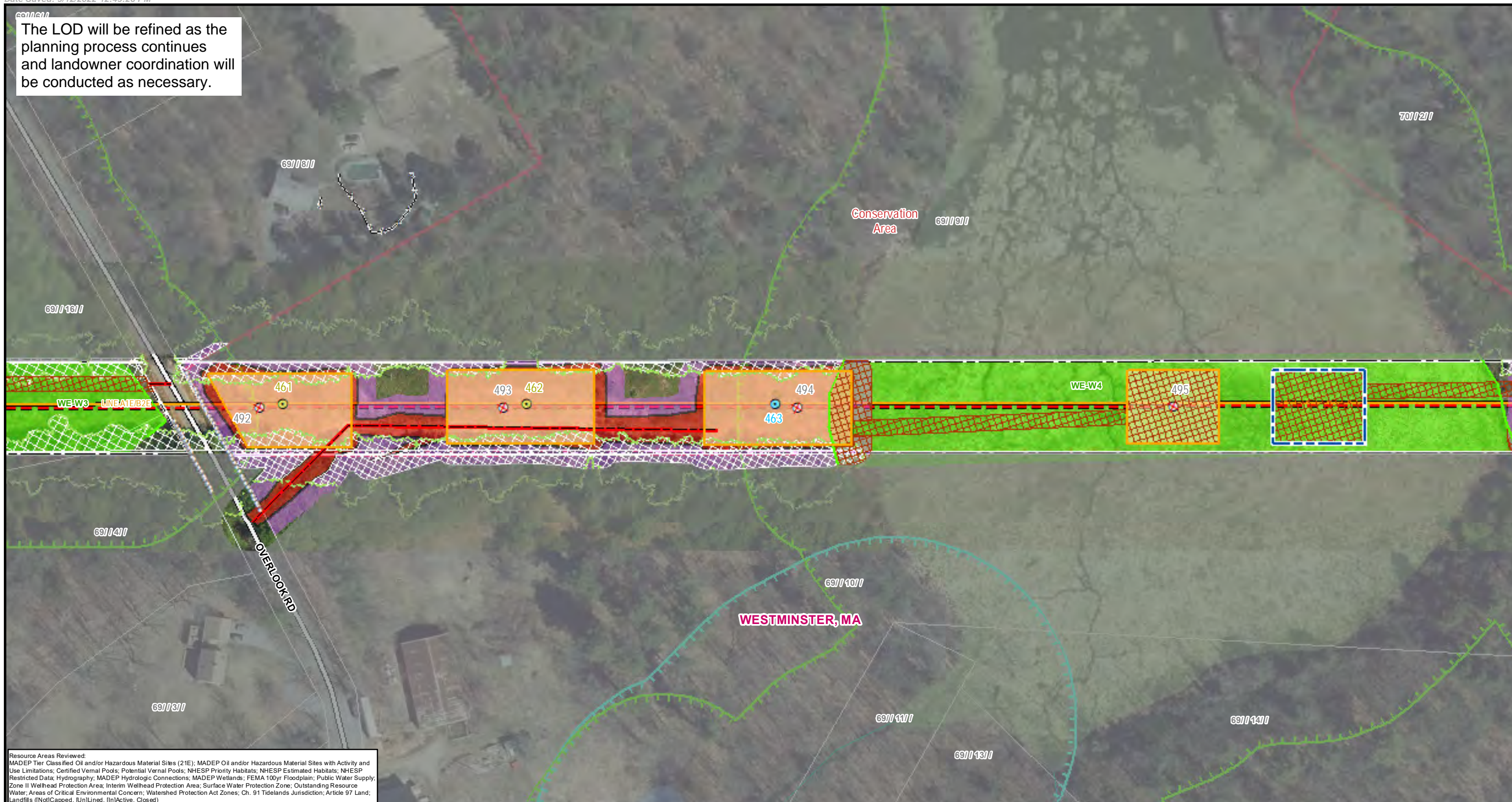
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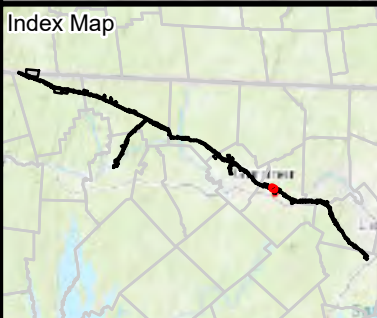
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0 50 100
Feet

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A1/B2 ACR PROJECT

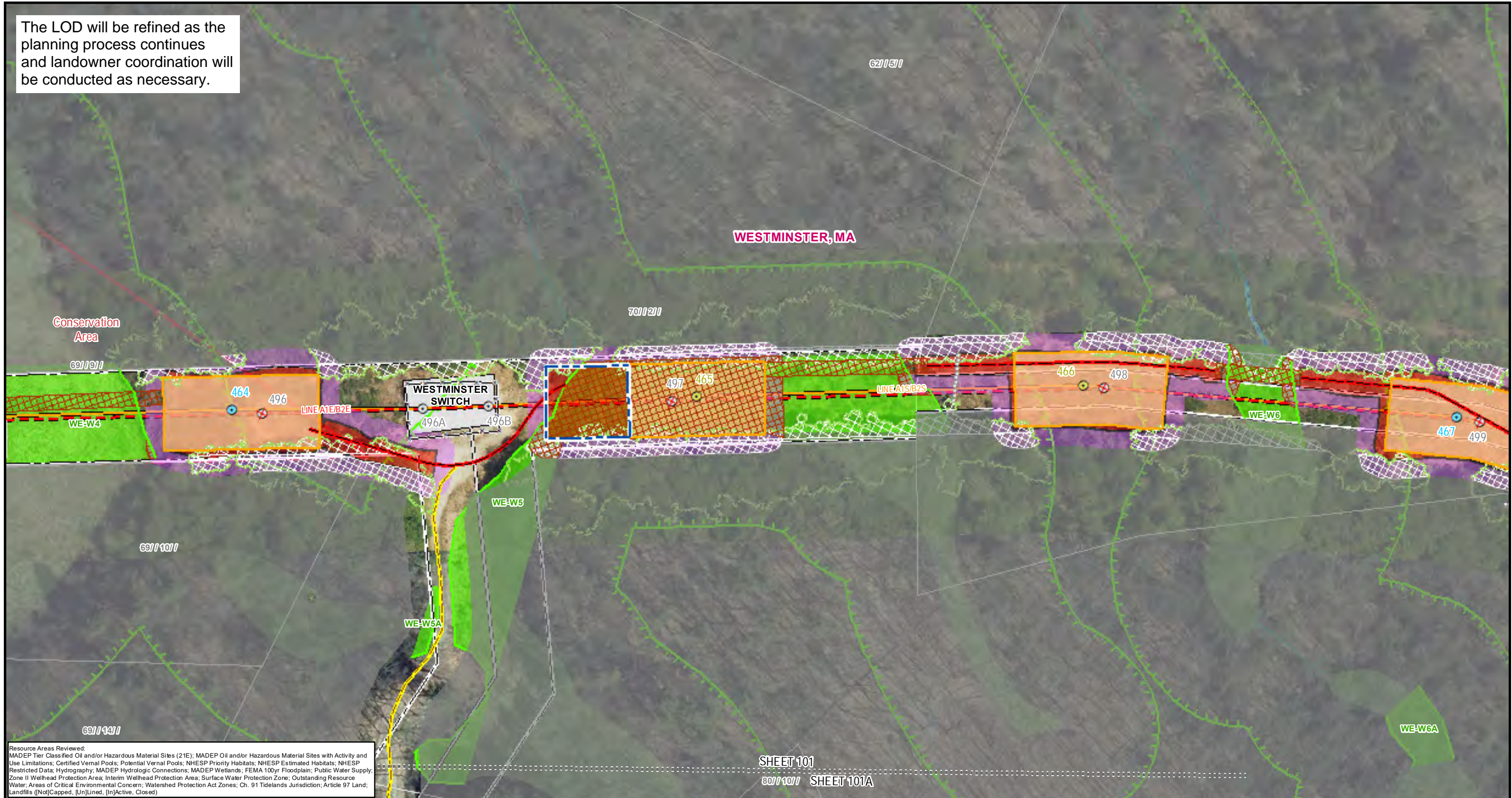
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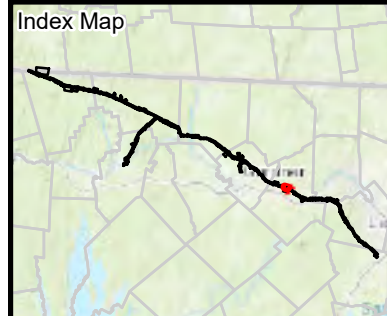
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
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 September 12, 2022

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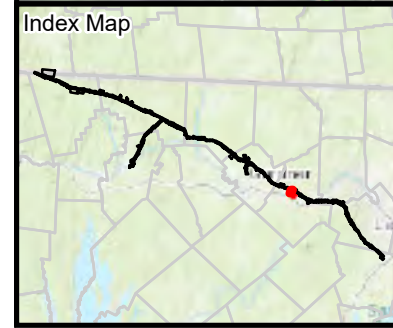
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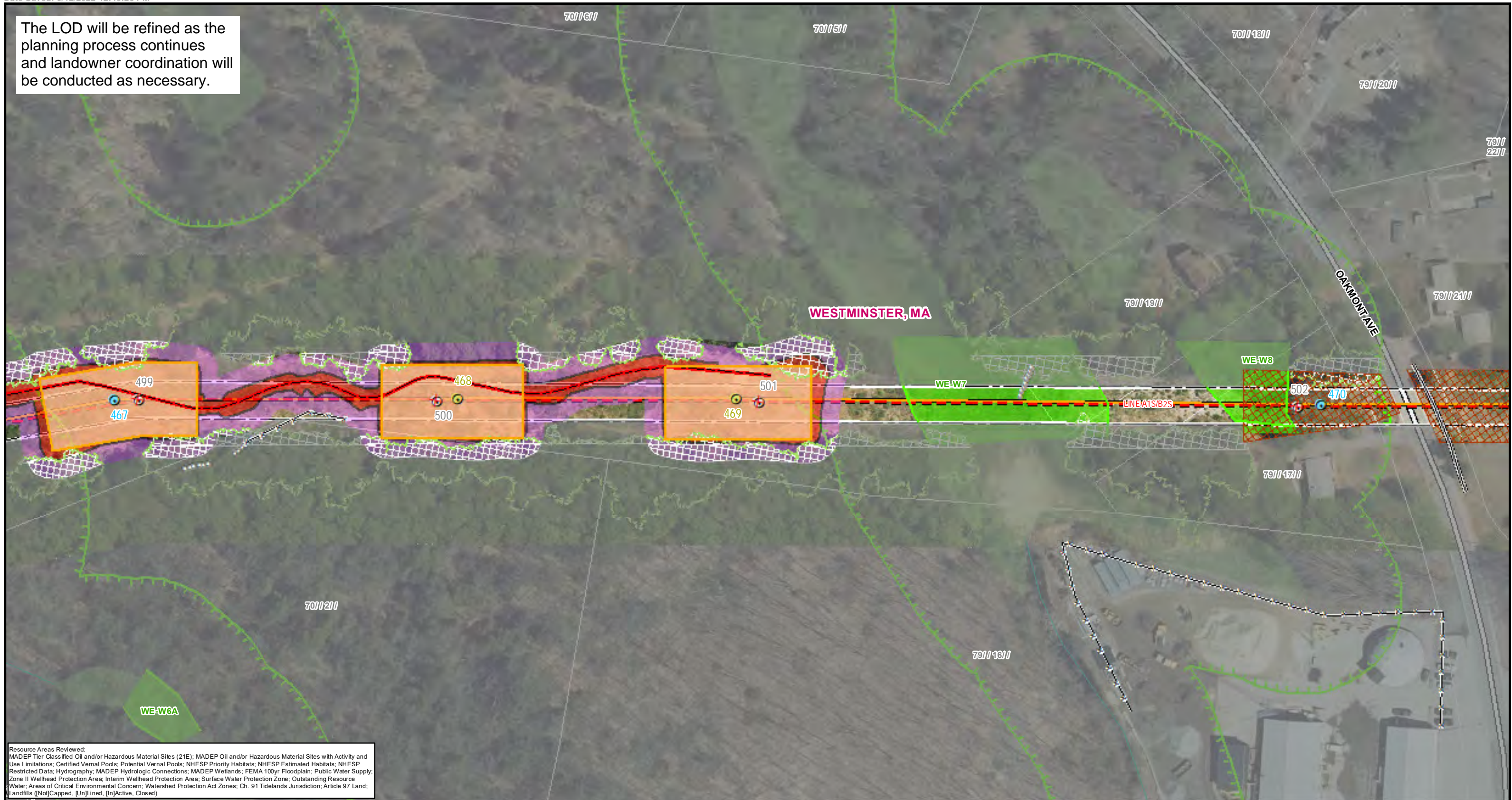
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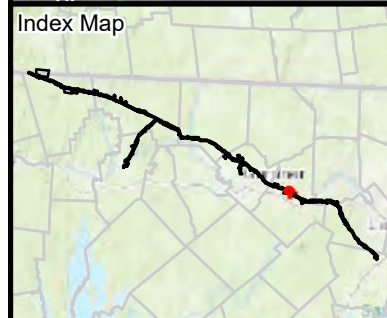
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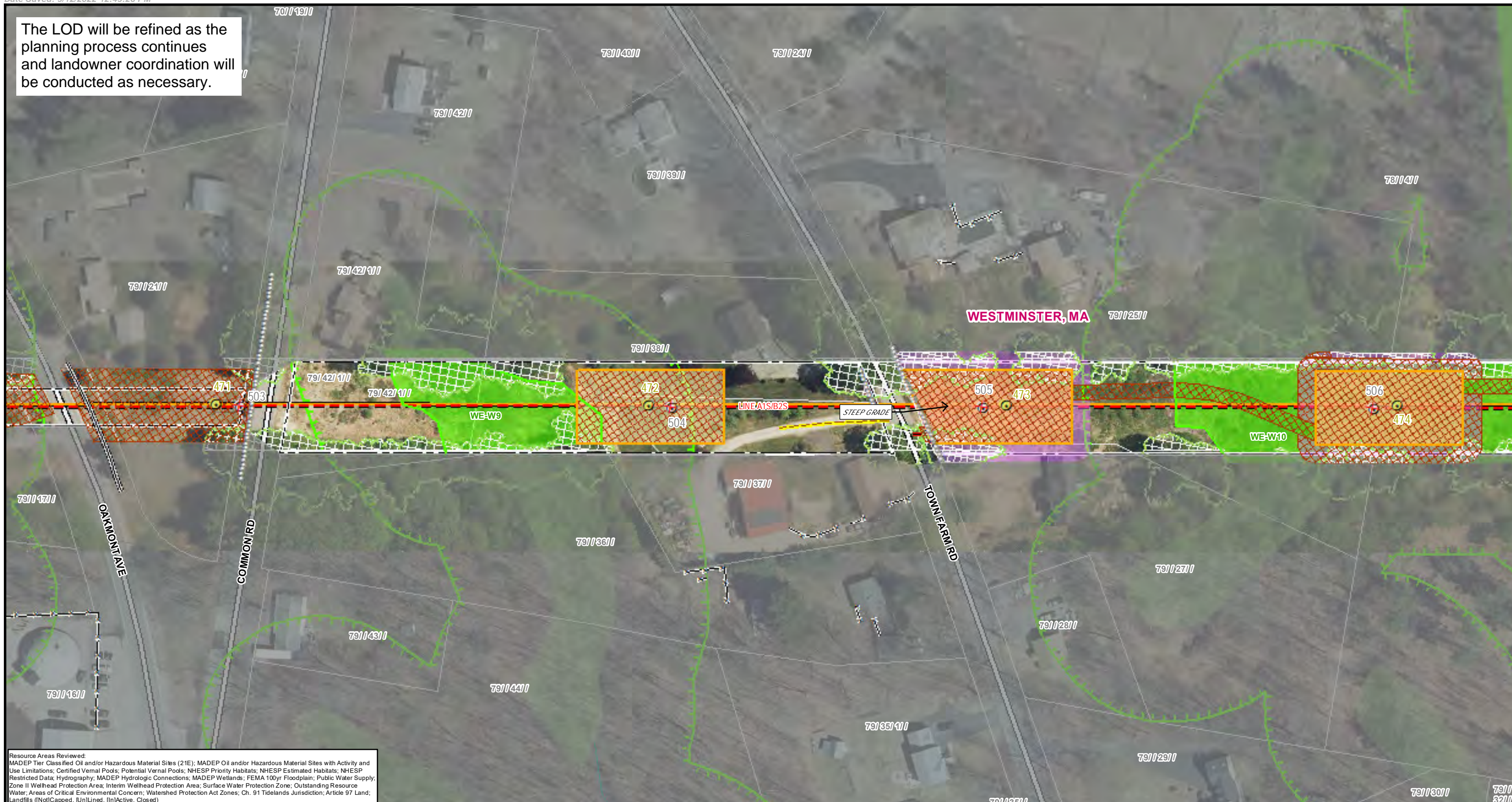
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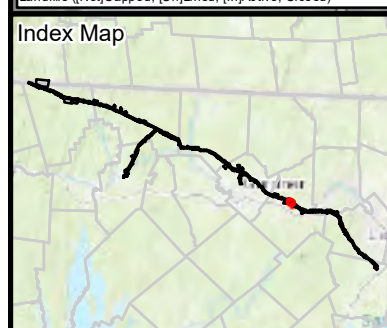
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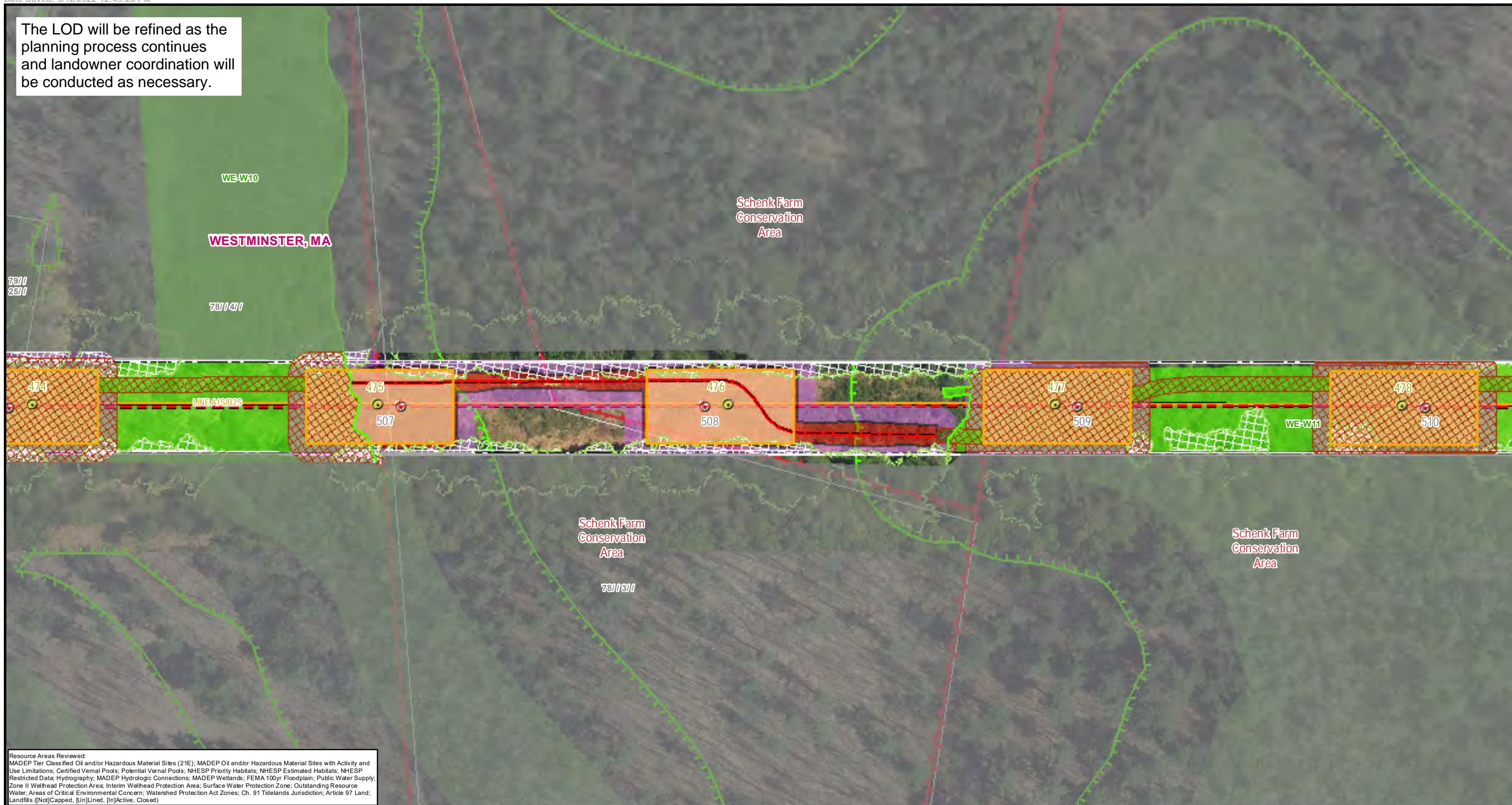
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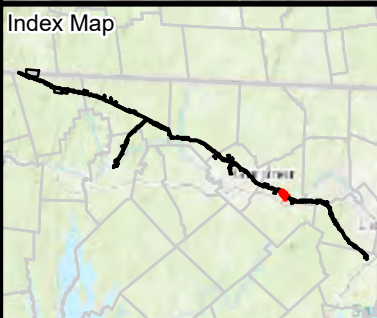
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Resource Areas Reviewed:
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Minority
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Income	Income
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

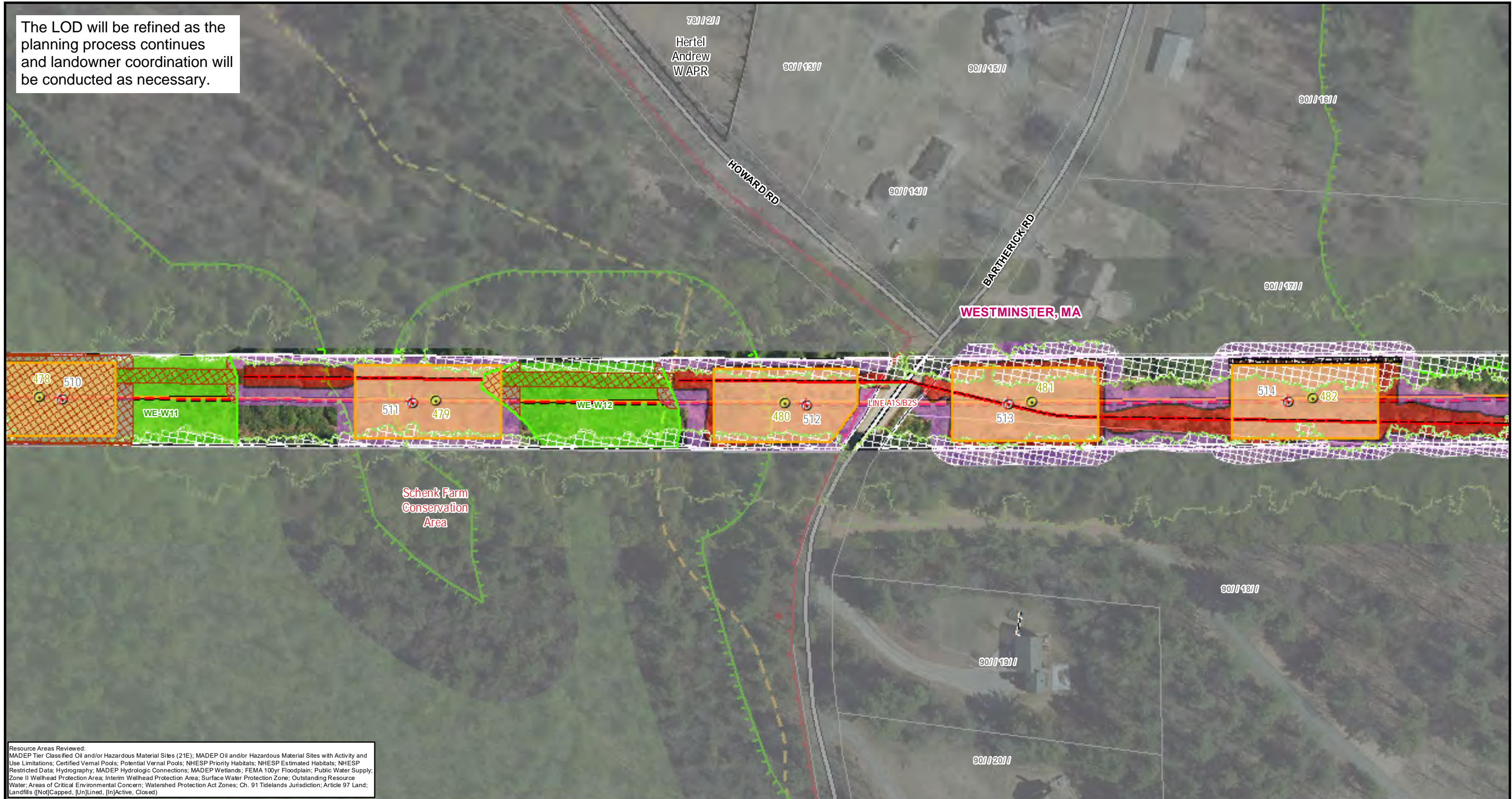
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**Indicates Layers Set to Transparency*

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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<p>Index Map</p>	<p>Legend</p> <p>Construction Activities</p> <ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 <p>Designed Road Type 3-5</p> <ul style="list-style-type: none"> Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal <p>Best Management Practices</p> <ul style="list-style-type: none"> Construction Matting Construction Practices <p>Existing Conditions</p> <ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Edge of ROW 	<p>Resource Areas</p> <ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* <p>Approximate Wetland Edge</p> <ul style="list-style-type: none"> Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data 	<p>Interim Wellhead Protection Area</p> <ul style="list-style-type: none"> Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<p>National Grid Property</p> <ul style="list-style-type: none"> Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail <p>Environmental Justice 2020 Populations</p> <ul style="list-style-type: none"> Minority & Income Minority Income 	<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private <p>Scale: 1 inch = 100 feet</p> <p>North Arrow</p> <p>*Indicates Layers Set to Transparency</p>
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

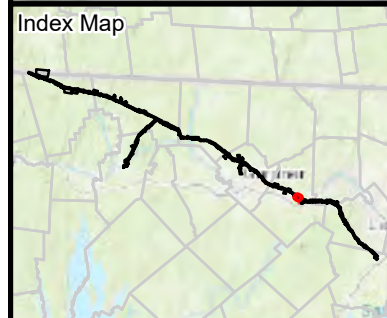
Westminister, MA
 Page 105 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities <ul style="list-style-type: none">Remove StructureInstall Structure (Concrete Caisson)Install Structure (Direct Embed)Install Structure (Vertical Jumper Switch)In Kind Direct Embed Structure ReplacementIn Kind Structure on Concrete Caisson ReplacementReuse StructureGeneral MaintenanceProposed CenterlineRemove OH LineStandard Road Type 1 & 2	<ul style="list-style-type: none">Designed Road Type 3-5Work EnvelopePull PadLimit of Cut/FillLimit of DisturbanceProposed Retaining WallProposed Tree RemovalBest Management PracticesConstruction MattingExisting ConditionsExisting StructureOther Existing Transmission CenterlineEdge of ROW	<ul style="list-style-type: none">Existing AccessExisting Tree LineResource AreasDelineated Wetland EdgeDelineated WetlandDelineated Vernal Pool Extent*Delineated Top of BankDelineated Stream CenterlineDelineated Ordinary High WaterApproximate Top of BankApproximate Ordinary High WaterApproximate SwaleDelineated Open Water*	<ul style="list-style-type: none">Approximate Wetland EdgeApproximate WetlandState StreamsState Wetlands*State Open Water*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Certified Vernal PoolsPotential Vernal PoolsNHESP Priority & Estimated HabitatsNHESP Restricted Data	<ul style="list-style-type: none">Interim Wellhead Protection AreaZone II Wellhead Protection AreaSurface Water Protection ZoneOutstanding Resource WaterPublic Water SupplyMADEP (21E) SiteMADEP AUL SiteRailroadDCR TrailsHiking TrailsLong Distance TrailsParcel Boundary	<ul style="list-style-type: none">National Grid PropertyTown BoundaryState BoundaryGateCulvertFenceStonewallGuardrailEnvironmental Justice 2020 PopulationsMinority & IncomeMinorityIncome	<ul style="list-style-type: none">Article 97 LandsDCR-State Parks & RecreationDepartment of Fish & GameLand TrustMunicipalPrivate
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1 inch = 100 feet
0 50 100 Feet
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A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

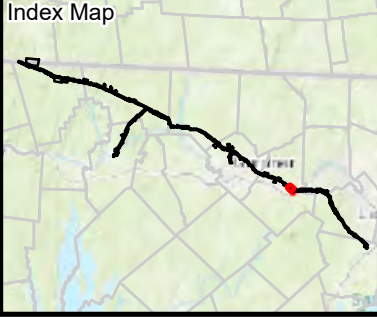
Westminister, MA
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Construction Activities		Resource Areas		Interim Wellhead Protection Area		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Interim Wellhead Protection Area	National Grid Property	DCR-State Parks & Recreation	Department of Fish & Game
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Zone II Wellhead Protection Area	Town Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	Limit of Disturbance	State Streams	Surface Water Protection Zone	State Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland Edge	State Wetlands*	Outstanding Resource Water	Gate	Department of Fish & Game	Department of Fish & Game
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Wetland	State Open Water*	Public Water Supply	Culvert	Department of Fish & Game	Department of Fish & Game
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Vernal Pool Extent*	100ft Buffer to Wetlands & Streams	MADEP (21E) Site	Fence	Department of Fish & Game	Department of Fish & Game
Reuse Structure	Proposed Tree Removal	Delineated Top of Bank	200ft Riverfront Area	MADEP AUL Site	Stonewall	Department of Fish & Game	Department of Fish & Game
General Maintenance	Best Management Practices	Delineated Stream Centerline	FEMA 100yr Floodplain*	Railroad	Guardrail	Department of Fish & Game	Department of Fish & Game
Proposed Centerline	Construction Matting	Delineated Ordinary High Water	Certified Vernal Pools	Hiking Trails	Private	Department of Fish & Game	Department of Fish & Game
Remove OH Line	Existing Conditions	Approximate Top of Bank	Potential Vernal Pools	DCR Trails		Department of Fish & Game	Department of Fish & Game
Standard Road Type 1 & 2	Existing Structure	Approximate Ordinary High Water	NHESP Priority & Estimated Habitats	Hiking Trails		Department of Fish & Game	Department of Fish & Game
	Other Existing Transmission Centerline	Approximate Swale	NHESP Restricted Data	Long Distance Trails		Department of Fish & Game	Department of Fish & Game
	Edge of ROW	Delineated Open Water*		Parcel Boundary		Department of Fish & Game	Department of Fish & Game

A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

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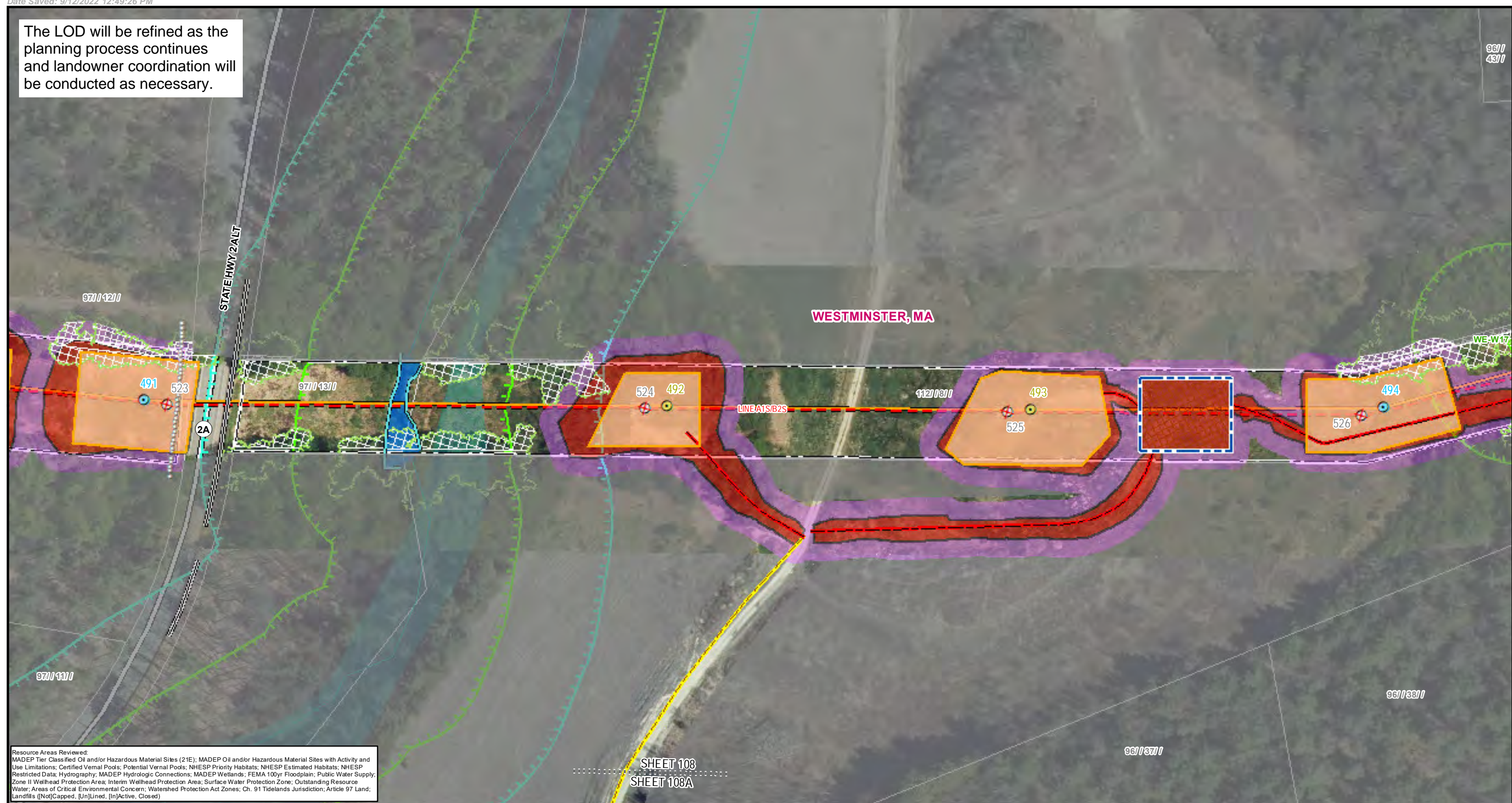
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**Indicates Layers Set to Transparency*

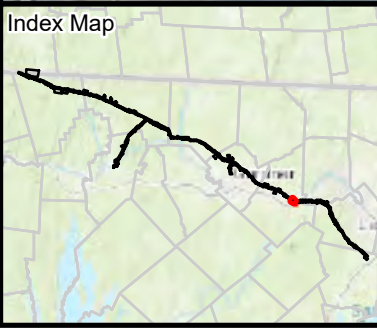
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Legend	
Construction Activities	Resource Areas
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<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<p>1 inch = 100 feet</p> <p>0 50 100</p> <p>Feet</p> <p>*Indicates Layers Set to Transparency</p>

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

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Index Map 	Legend Construction Activities Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW		Resource Areas Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data		Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income		Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private Scale: 1 inch = 100 feet 0 50 100 Feet *Indicates Layers Set to Transparency	
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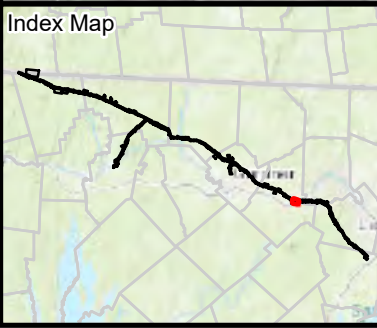
A1/B2 ACR PROJECT
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50% Design
September 12, 2022
 Westminister, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend	
Designed Road Type 3-5	Existing Access
Work Envelope	Existing Tree Line
Pull Pad	Approximate Wetland Edge
Limit of Cut/Fill	Approximate Wetland
Limit of Disturbance	State Streams
Proposed Retaining Wall	Delineated Wetland Edge
Proposed Tree Removal	Delineated Wetland
Best Management Practices	Delineated Vernal Pool Extent*
Construction Matting	100ft Buffer to Wetlands & Streams
Reuse Structure	200ft Riverfront Area
General Maintenance	FEMA 100yr Floodplain*
Proposed Centerline	Certified Vernal Pools
Remove OH Line	Potential Vernal Pools
Standard Road Type 1 & 2	NHESP Priority & Estimated Habitats
Other Existing Transmission Centerline	NHESP Restricted Data
Edge of ROW	Delineated Open Water*
Interim Wellhead Protection Area	National Grid Property
Zone II Wellhead Protection Area	Town Boundary
Surface Water Protection Zone	State Boundary
Outstanding Resource Water	Gate
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MADEP (21E) Site	Fence
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DCR Trails	Environmental Justice 2020 Populations
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Long Distance Trails	Minority
Parcel Boundary	Income

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

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1 inch = 100 feet

0 50 100

Feet

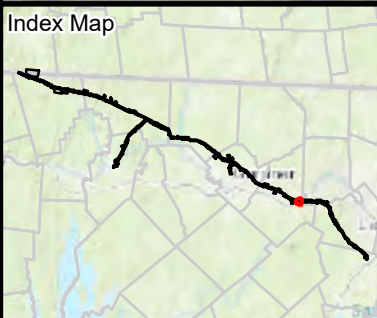
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Best Management Practices	Existing Conditions
<ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Edge of ROW
Article 97 Lands	Environmental Justice 2020 Populations
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A1/B2 ACR PROJECT

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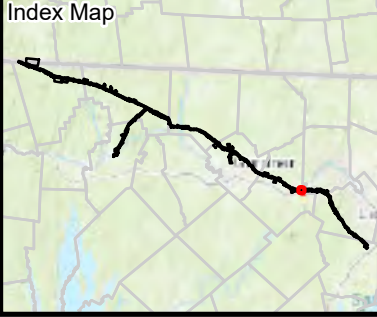
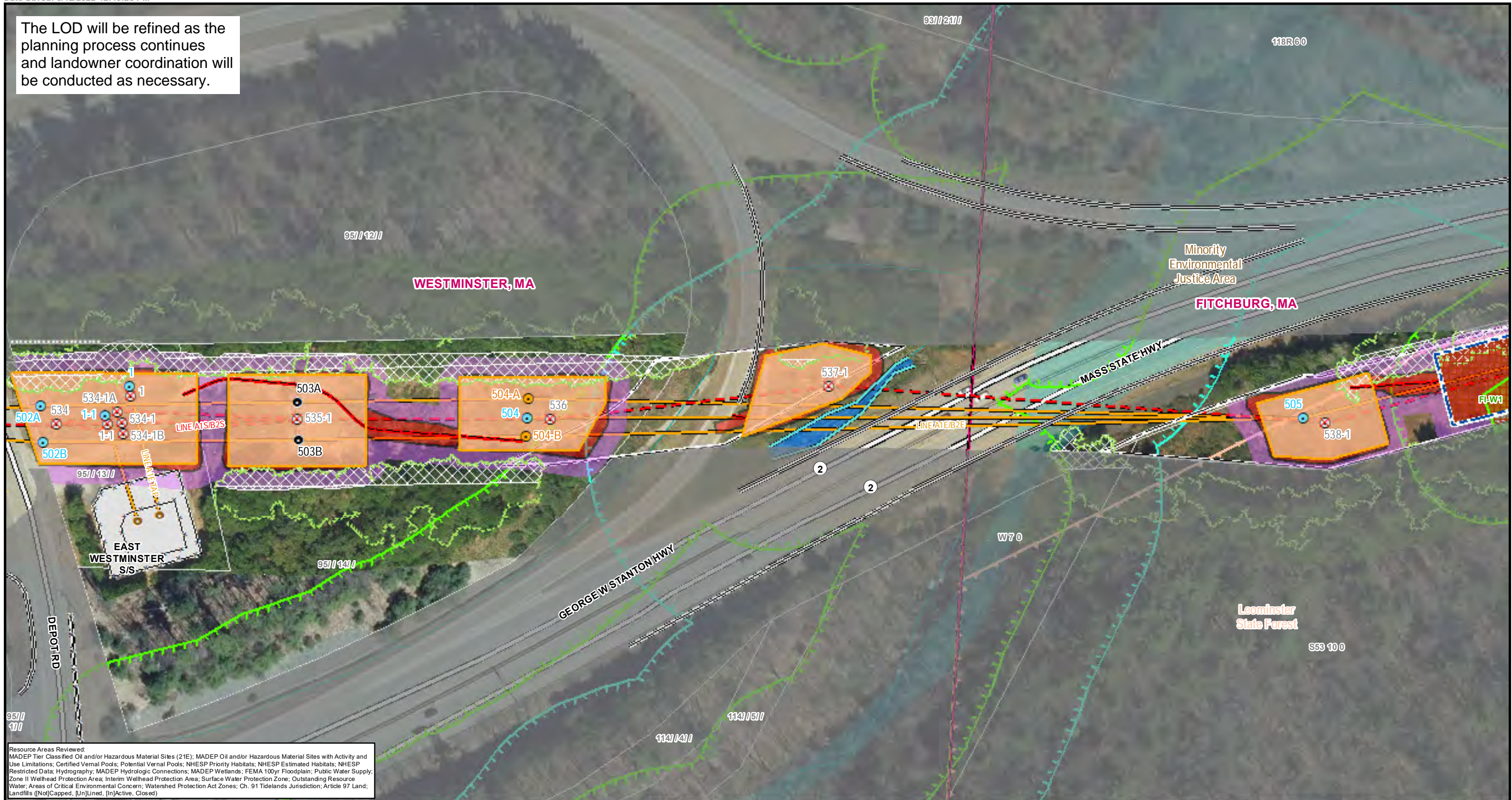
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1 inch = 100 feet
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<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
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A1/B2 ACR PROJECT

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50% Design

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Westminister & Fitchburg, MA

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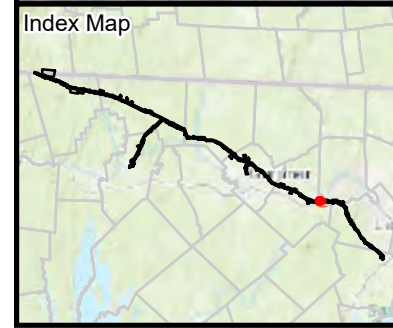
nationalgrid

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Resource Areas Reviewed:
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Minority
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Income	Income
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area		
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Approximate Swale	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline	Delineated Open Water*	NHESP Restricted Data		
	Edge of ROW				

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

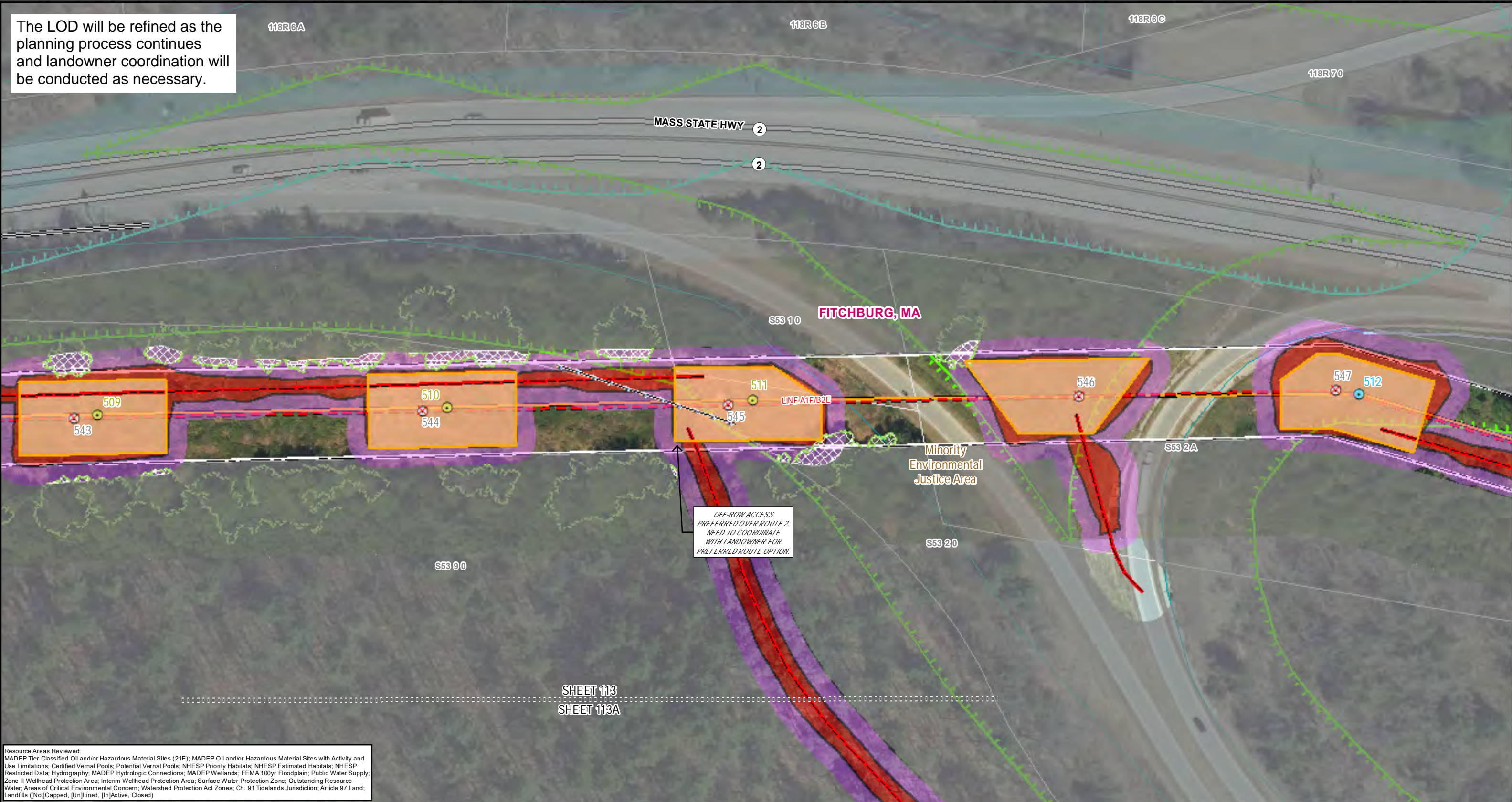
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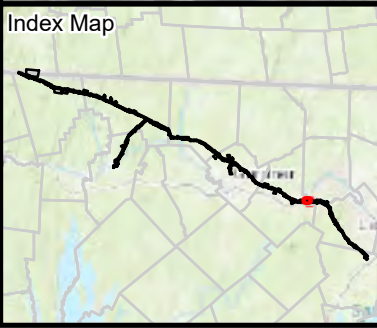
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Minority
Install Structure (Direct Embed)	Pull Pad	Limit of Cut/Fill	State Streams	Income	Income
Install Structure (Vertical Jumper Switch)	Limit of Disturbance	Delineated Wetland Edge	State Wetlands*		
In Kind Direct Embed Structure Replacement	Proposed Retaining Wall	Delineated Wetland	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Tree Removal	Delineated Vernal Pool Extent*	100ft Buffer to Wetlands & Streams		
Reuse Structure	Best Management Practices	Delineated Top of Bank	200ft Riverfront Area		
General Maintenance	Construction Matting	Delineated Stream Centerline	FEMA 100yr Floodplain*		
Proposed Centerline	Existing Conditions	Delineated Ordinary High Water	Certified Vernal Pools		
Remove OH Line	Existing Structure	Approximate Top of Bank	Potential Vernal Pools		
Standard Road Type 1 & 2	Other Existing Transmission Centerline	Approximate Ordinary High Water	NHESP Priority & Estimated Habitats		
	Edge of ROW	Delineated Swale	NHESP Restricted Data		
		Delineated Open Water*			

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

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1 inch = 100 feet

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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SHEET 113
 SHEET 113A

S53 90

S53 20

Leominster State Forest

S53 100

Minority Environmental Justice Area
 FITCHBURG, MA

S53 80

ROYAL PLAZA DR

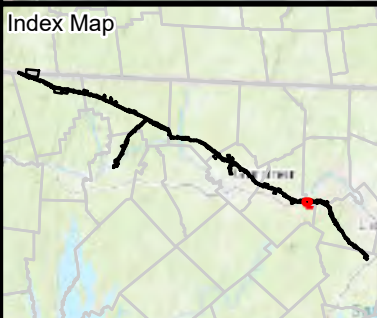
S53 8A

PRINCETON RD

S53 20

S53 81

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Legend	
Construction Activities	Resource Areas
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<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
<ul style="list-style-type: none"> Existing Access Existing Tree Line 	<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary
<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income 	<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

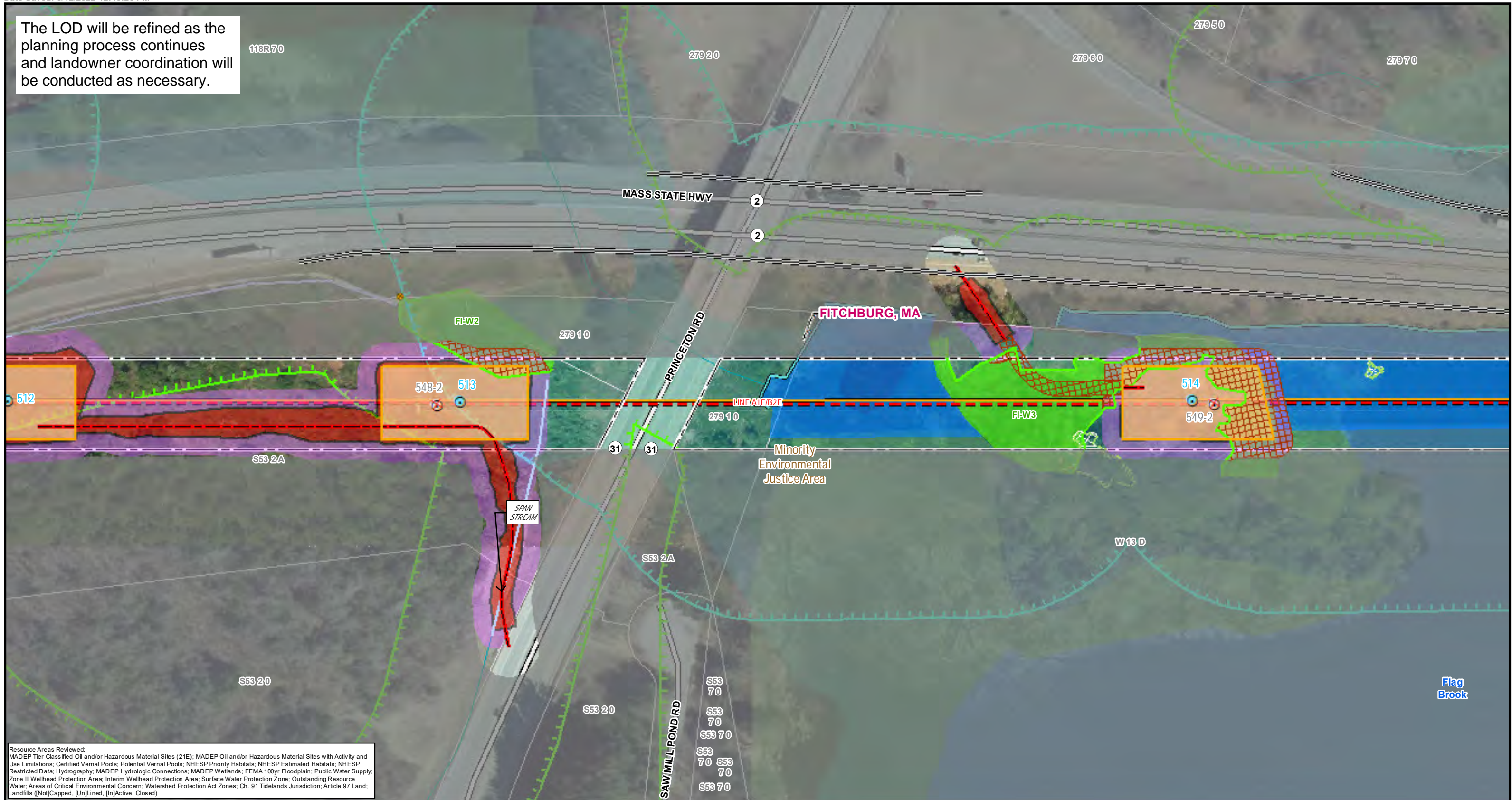
50% Design

September 12, 2022

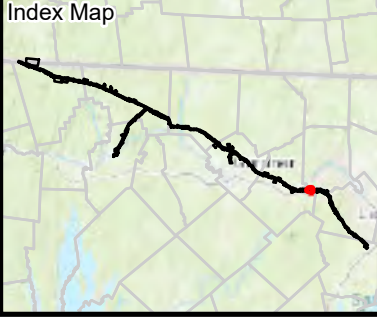
Fitchburg, MA
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Construction Activities		Resource Areas		Environmental Justice		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Interim Wellhead Protection Area	National Grid Property	DCR-State Parks & Recreation	Department of Fish & Game
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Zone II Wellhead Protection Area	Town Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Surface Water Protection Zone	State Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Outstanding Resource Water	Gate	Department of Fish & Game	Department of Fish & Game
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	Public Water Supply	Culvert	Department of Fish & Game	Department of Fish & Game
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Stream Centerline	100ft Buffer to Wetlands & Streams	MADEP (21E) Site	Fence	Department of Fish & Game	Department of Fish & Game
Reuse Structure	Proposed Tree Removal	Delineated Ordinary High Water	200ft Riverfront Area	MADEP AUL Site	Stonewall	Department of Fish & Game	Department of Fish & Game
General Maintenance	Construction Matting	Approximate Top of Bank	FEMA 100yr Floodplain*	Railroad	Guardrail	Department of Fish & Game	Department of Fish & Game
Proposed Centerline	Best Management Practices	Approximate Ordinary High Water	Certified Vernal Pools	DCR Trails	Environmental Justice 2020 Populations	Department of Fish & Game	Department of Fish & Game
Remove OH Line	Construction Matting	Approximate Swale	Potential Vernal Pools	Hiking Trails	Minority & Income	Department of Fish & Game	Department of Fish & Game
Standard Road Type 1 & 2	Existing Conditions	Delineated Open Water*	NHESP Priority & Estimated Habitats	Long Distance Trails	Minority	Department of Fish & Game	Department of Fish & Game
	Existing Structure		NHESP Restricted Data	Parcel Boundary	Income	Department of Fish & Game	Department of Fish & Game
	Other Existing Transmission Centerline					Department of Fish & Game	Department of Fish & Game
	Edge of ROW					Department of Fish & Game	Department of Fish & Game

A1/B2 ACR PROJECT

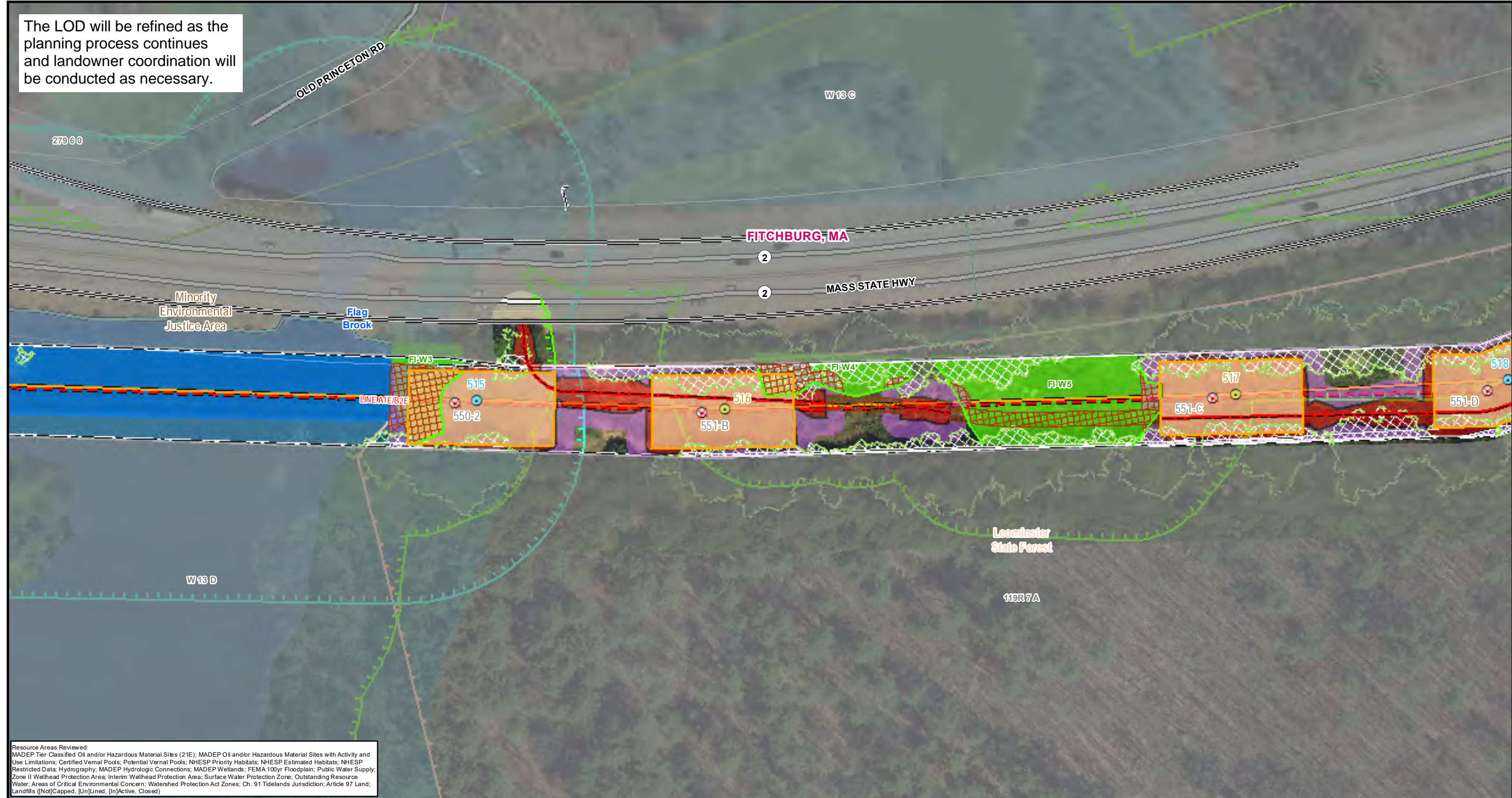
Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

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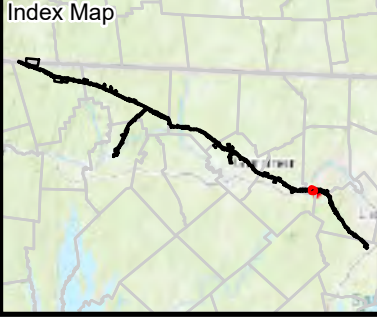
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Legend	
Construction Activities	Resource Areas
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

Fitchburg, MA
 Page 115 of 168

1 inch = 100 feet
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 Feet

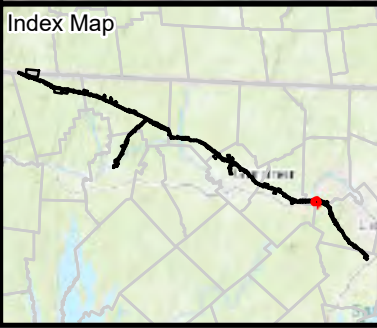
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Legend

<p>Construction Activities</p> <ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<p>Designed Road Type 3-5</p> <p>Work Envelope</p> <p>Pull Pad <p>Limit of Cut/Fill <p>Limit of Disturbance</p> <p>Proposed Retaining Wall</p> <p>Proposed Tree Removal</p> <p>Best Management Practices</p> <p>Construction Matting</p> <p>Existing Conditions</p> <p>Existing Structure</p> <p>Other Existing Transmission Centerline</p> <p>Edge of ROW</p> </p></p>	<p>Existing Access</p> <p>Existing Tree Line</p> <p>Resource Areas</p> <p>Delineated Wetland Edge</p> <p>Delineated Wetland</p> <p>Delineated Vernal Pool Extent*</p> <p>Delineated Top of Bank</p> <p>Delineated Stream Centerline</p> <p>Delineated Ordinary High Water</p> <p>Approximate Top of Bank</p> <p>Approximate Ordinary High Water</p> <p>Approximate Swale</p> <p>Delineated Open Water*</p>	<p>Approximate Wetland Edge</p> <p>Approximate Wetland</p> <p>State Streams</p> <p>State Wetlands*</p> <p>State Open Water*</p> <p>100ft Buffer to Wetlands & Streams</p> <p>200ft Riverfront Area</p> <p>FEMA 100yr Floodplain*</p> <p>Certified Vernal Pools</p> <p>Potential Vernal Pools</p> <p>NHESP Priority & Estimated Habitats</p> <p>NHESP Restricted Data</p>	<p>Interim Wellhead Protection Area</p> <p>Zone II Wellhead Protection Area</p> <p>Surface Water Protection Zone</p> <p>Outstanding Resource Water</p> <p>Public Water Supply</p> <p>MADEP (21E) Site</p> <p>MADEP AUL Site</p> <p>Railroad</p> <p>DCR Trails</p> <p>Hiking Trails</p> <p>Long Distance Trails</p> <p>Parcel Boundary</p>	<p>National Grid Property</p> <p>Town Boundary</p> <p>State Boundary</p> <p>Gate</p> <p>Culvert</p> <p>Fence</p> <p>Stonewall</p> <p>Guardrail</p> <p>Environmental Justice 2020 Populations</p> <p>Minority & Income</p> <p>Minority</p> <p>Income</p>	<p>Article 97 Lands</p> <p>DCR-State Parks & Recreation</p> <p>Department of Fish & Game</p> <p>Land Trust</p> <p>Municipal</p> <p>Private</p>
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1 inch = 100 feet

0 50 100 Feet

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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

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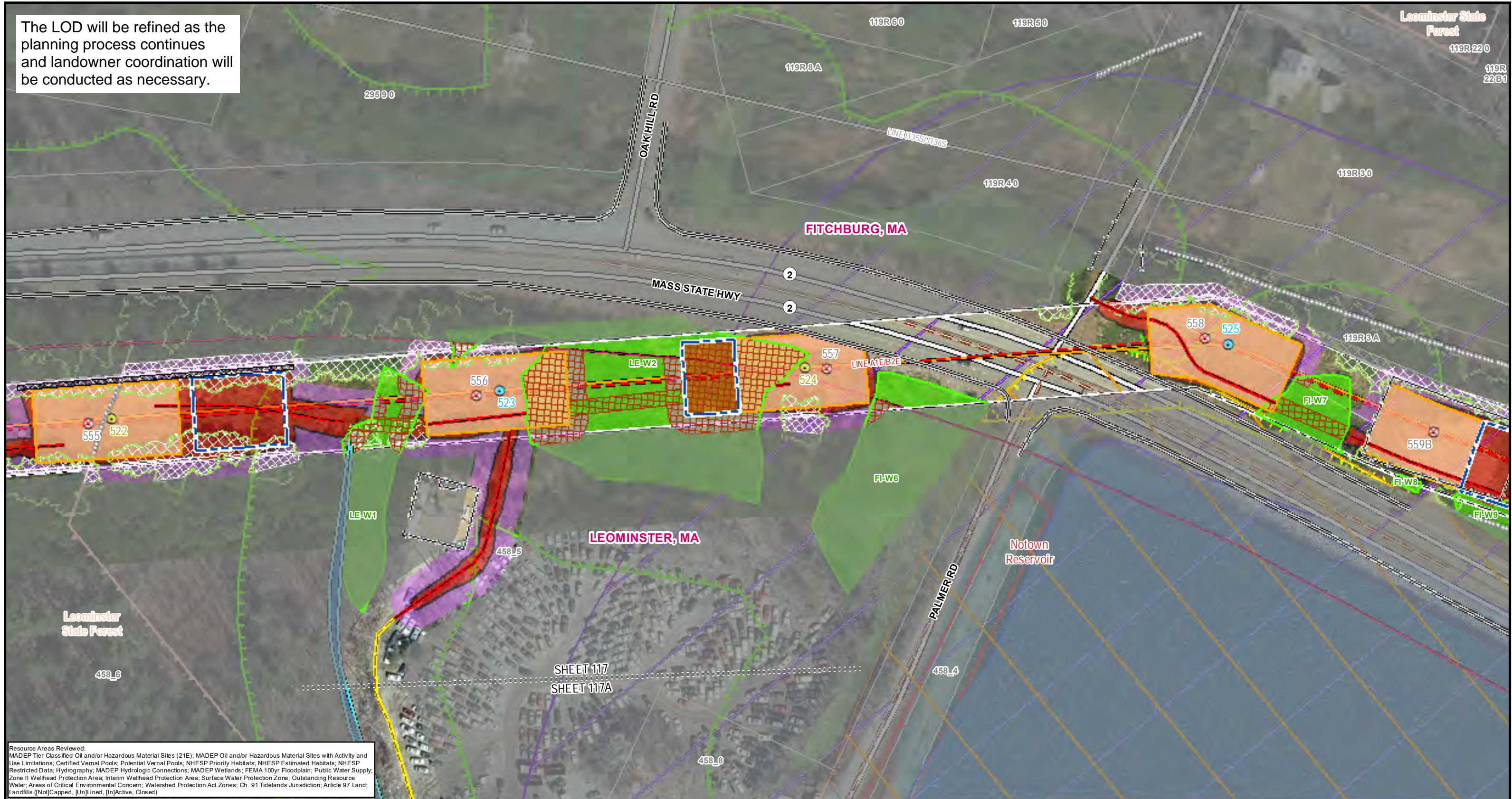
Page 116 of 168

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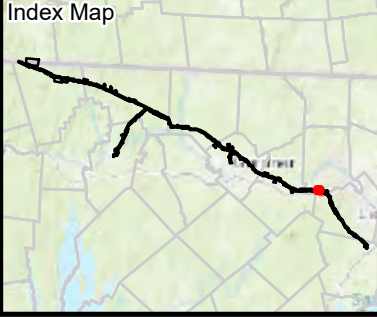
nationalgrid

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Legend	
Construction Activities	Resource Areas
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Best Management Practices	Existing Conditions
<ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting Construction Practices 	<ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Edge of ROW
Interim Wellhead Protection Area	Article 97 Lands
<ul style="list-style-type: none"> Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income

A1/B2 ACR PROJECT

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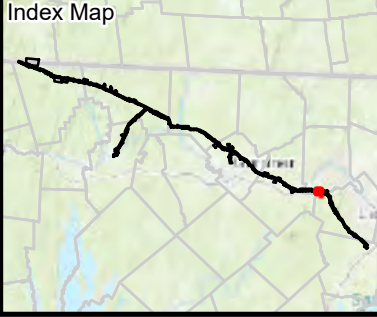
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<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income
<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	

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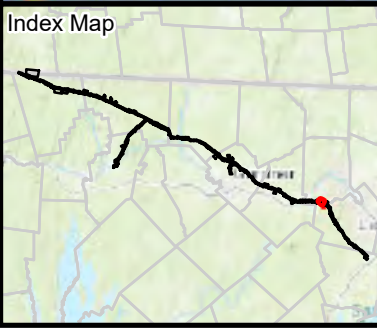
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 MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)



Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income
<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<p>1 inch = 100 feet</p> <p>0 50 100</p> <p>Feet</p> <p>*Indicates Layers Set to Transparency</p>

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

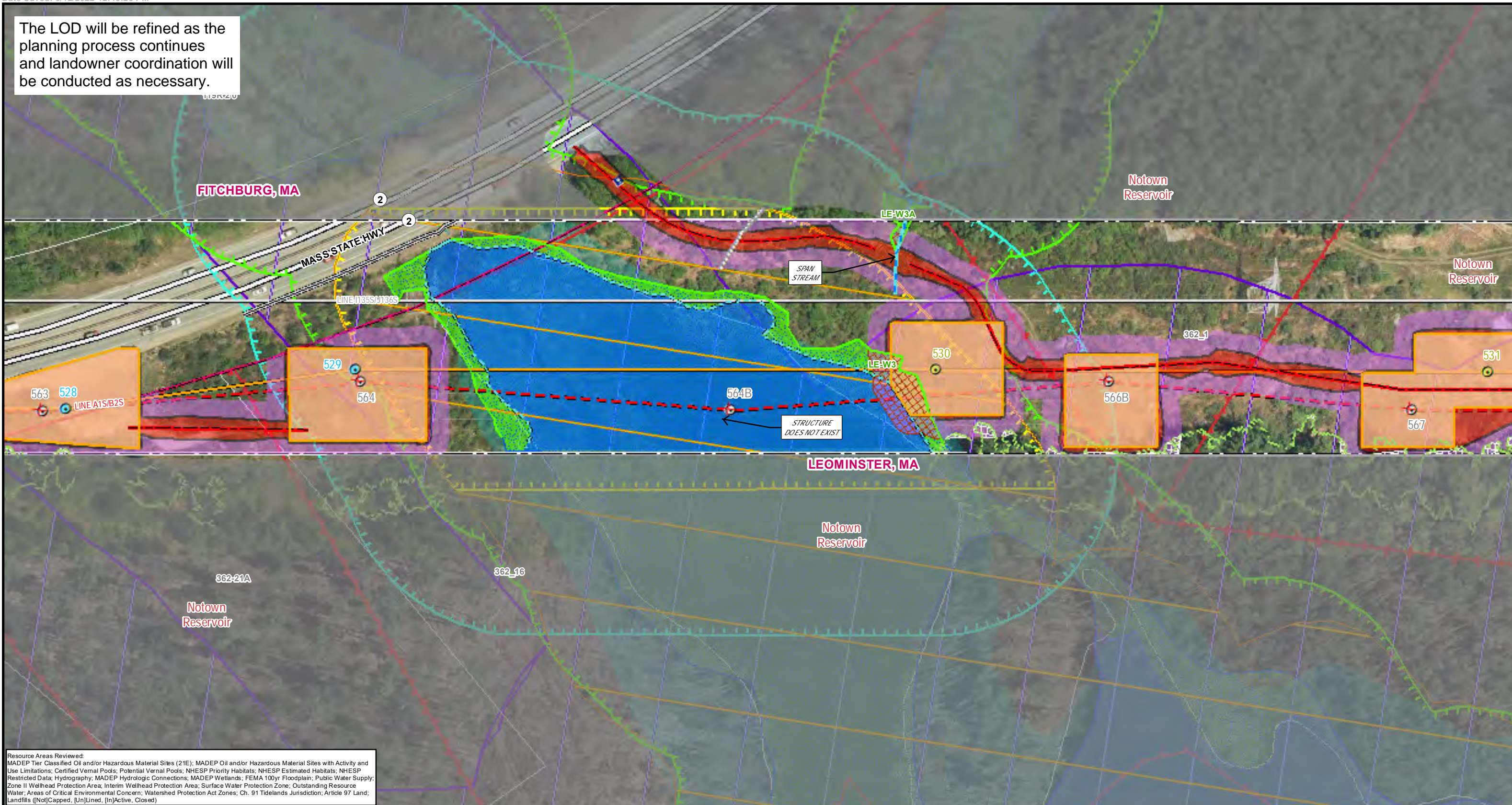
September 12, 2022

Fitchburg & Leominster, MA

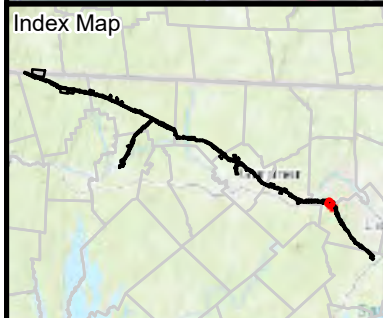
Page 118 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities		Resource Areas		Best Management Practices		Existing Conditions		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Proposed Retaining Wall	Interim Wellhead Protection Area	Proposed Centerline	Existing Structure	DCR-State Parks & Recreation	Department of Fish & Game
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Proposed Tree Removal	Zone II Wellhead Protection Area	Construction Matting	In Kind Direct Embed Structure Replacement	Department of Fish & Game	Land Trust
Install Structure (Direct Embed)	Pull Pad	State Streams	State Wetlands*	Limit of Disturbance	Surface Water Protection Zone	Construction Matting	In Kind Structure on Concrete Caisson Replacement	Department of Fish & Game	Municipal
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland Edge	State Open Water*	Limit of Disturbance	Outstanding Resource Water	Construction Matting	In Kind Structure on Concrete Caisson Replacement	Department of Fish & Game	Private
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Wetland	100ft Buffer to Wetlands & Streams	Proposed Retaining Wall	Public Water Supply	Construction Matting	Reuse Structure	Department of Fish & Game	
In Kind Structure on Concrete Caisson Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	200ft Riverfront Area	Proposed Tree Removal	MADEP (21E) Site	Construction Matting	General Maintenance	Department of Fish & Game	
Reuse Structure	Limit of Disturbance	Delineated Top of Bank	FEMA 100yr Floodplain*	Proposed Tree Removal	MADEP AUL Site	Construction Matting	Proposed Centerline	Department of Fish & Game	
Proposed Centerline	Limit of Disturbance	Delineated Stream Centerline	Certified Vernal Pools	Proposed Tree Removal	Railroad	Construction Matting	Remove OH Line	Department of Fish & Game	
Remove OH Line	Limit of Disturbance	Delineated Ordinary High Water	Potential Vernal Pools	Proposed Tree Removal	Hiking Trails	Construction Matting	Standard Road Type 1 & 2	Department of Fish & Game	
Standard Road Type 1 & 2	Limit of Disturbance	Approximate Top of Bank	NHESP Priority & Estimated Habitats	Proposed Tree Removal	Long Distance Trails	Construction Matting		Department of Fish & Game	
	Limit of Disturbance	Approximate Ordinary High Water	NHESP Restricted Data	Proposed Tree Removal	Parcel Boundary	Construction Matting		Department of Fish & Game	
	Limit of Disturbance	Approximate Swale		Proposed Tree Removal		Construction Matting		Department of Fish & Game	
	Limit of Disturbance	Delineated Open Water*		Proposed Tree Removal		Construction Matting		Department of Fish & Game	
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

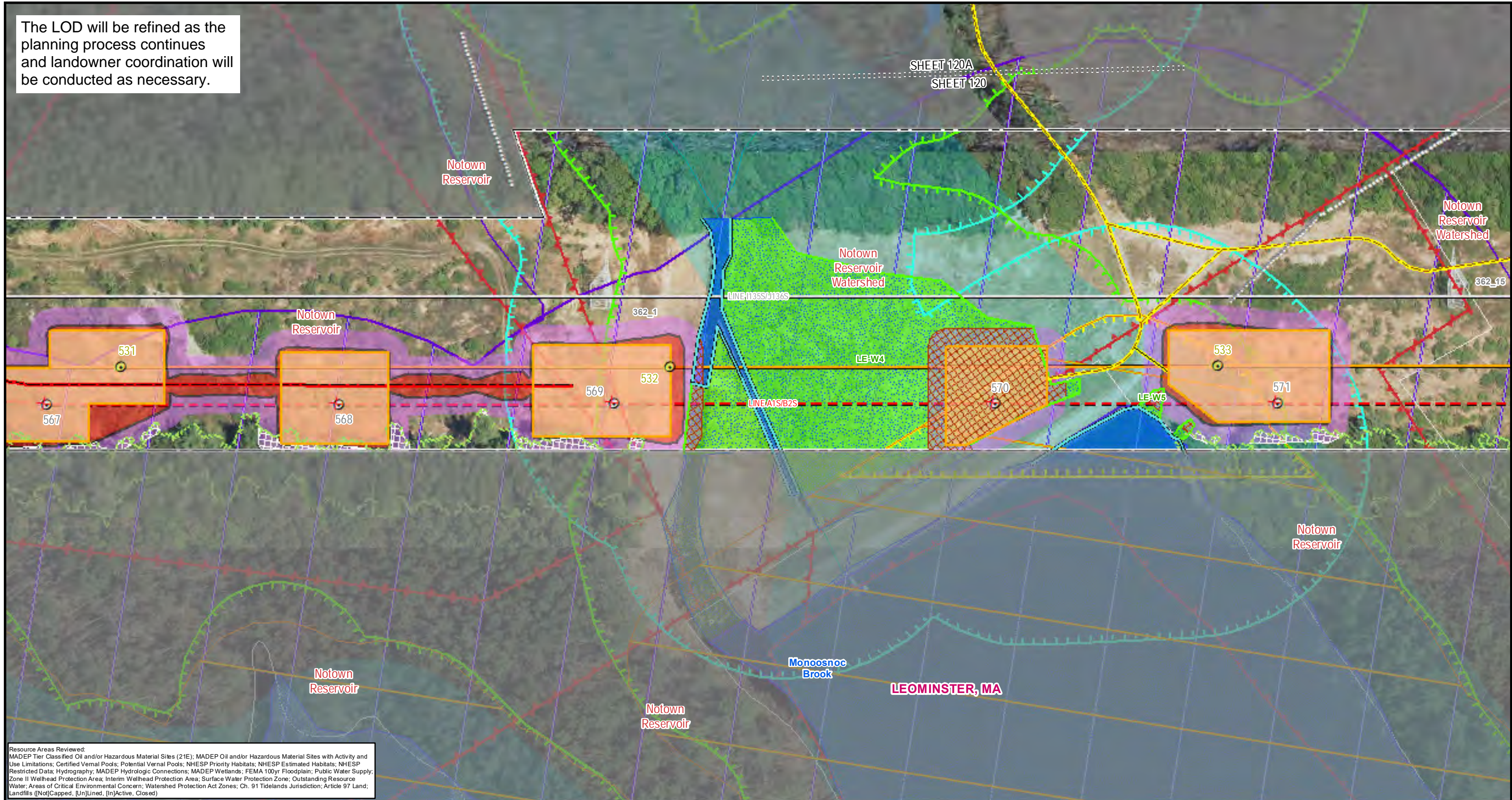
Fitchburg & Leominster, MA
Page 119 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

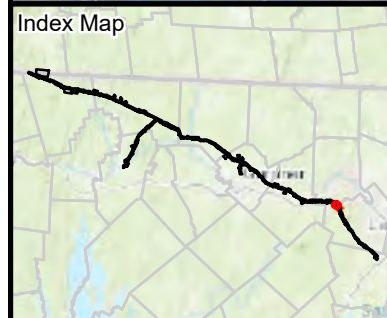
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Legend	
Construction Activities	Resource Areas
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<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
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<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<p>1 inch = 100 feet</p> <p>0 50 100</p> <p>Feet</p> <p>*Indicates Layers Set to Transparency</p>

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

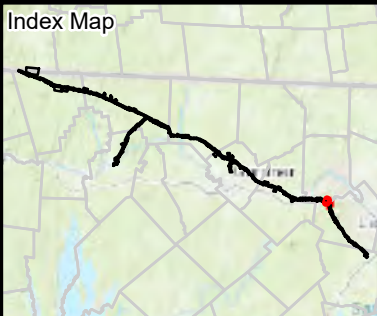
Leominster, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities	Resource Areas	Existing Conditions	Article 97 Lands
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data 	<ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Edge of ROW Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Construction Practices Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income

A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

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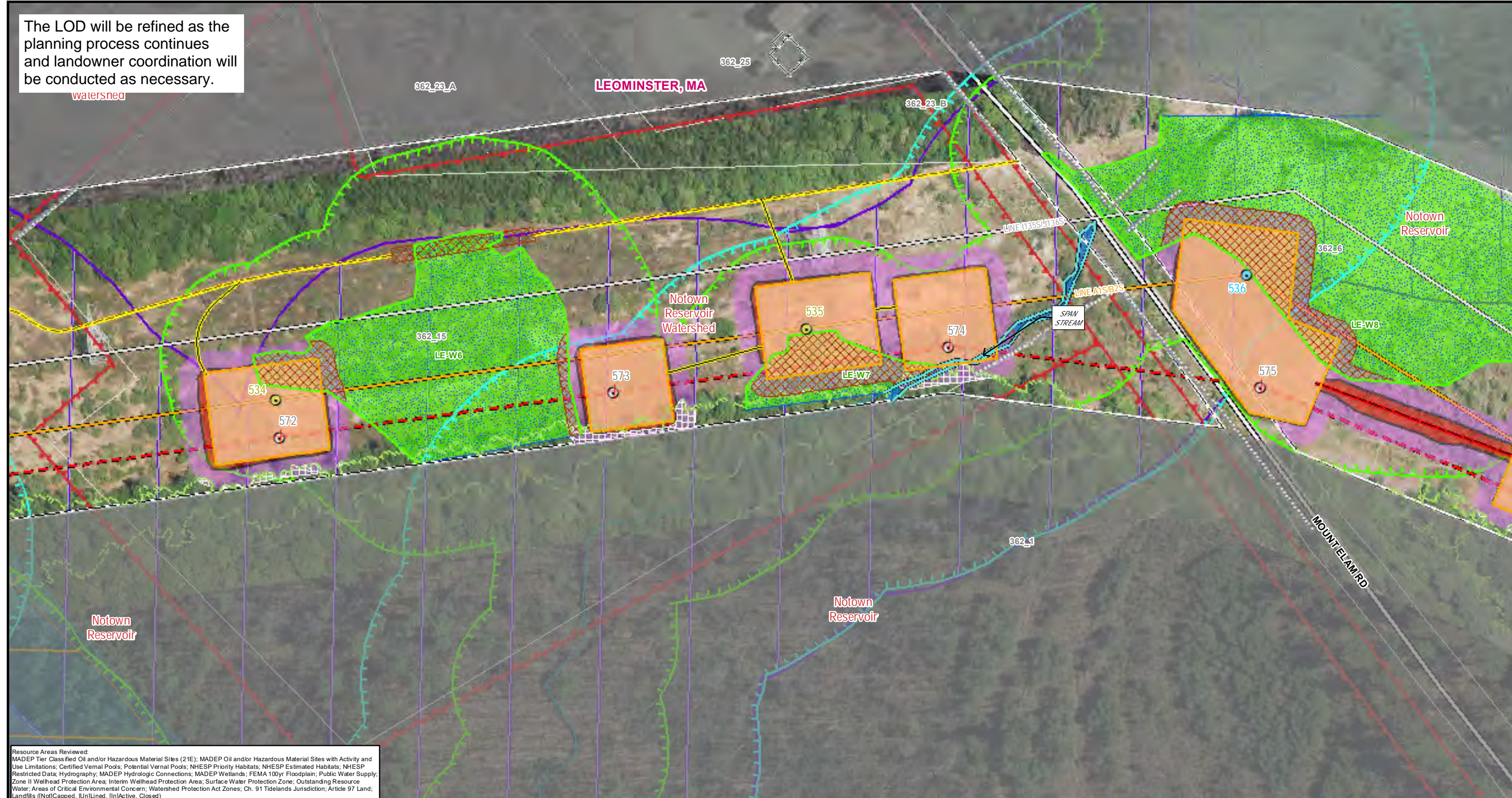
1 inch = 100 feet
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 Feet

**Indicates Layers Set to Transparency*

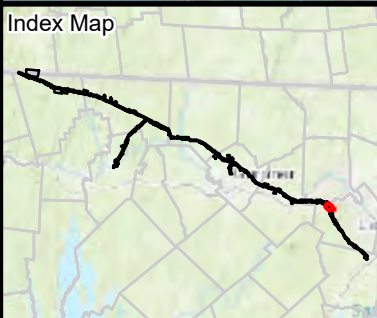
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watershed



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<p>Legend</p> <p>Construction Activities</p> <ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<p>Designed Road Type 3-5</p> <p>Work Envelope</p> <p>Pull Pad</p> <p>Limit of Cut/Fill</p> <p>Limit of Disturbance</p> <p>Proposed Retaining Wall</p> <p>Proposed Tree Removal</p> <p>Best Management Practices</p> <ul style="list-style-type: none"> Construction Matting Existing Structure Other Existing Transmission Centerline Edge of ROW 	<p>Existing Access</p> <p>Existing Tree Line</p> <p>Resource Areas</p> <ul style="list-style-type: none"> Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* 	<p>Approximate Wetland Edge</p> <p>Approximate Wetland</p> <p>State Streams</p> <p>State Wetlands*</p> <p>State Open Water*</p> <p>100ft Buffer to Wetlands & Streams</p> <p>200ft Riverfront Area</p> <p>FEMA 100yr Floodplain*</p> <p>Certified Vernal Pools</p> <p>Potential Vernal Pools</p> <p>NHESP Priority & Estimated Habitats</p> <p>NHESP Restricted Data</p>	<p>Interim Wellhead Protection Area</p> <p>Zone II Wellhead Protection Area</p> <p>Surface Water Protection Zone</p> <p>Outstanding Resource Water</p> <p>Public Water Supply</p> <p>MADEP (21E) Site</p> <p>MADEP AUL Site</p> <p>Railroad</p> <p>DCR Trails</p> <p>Hiking Trails</p> <p>Long Distance Trails</p> <p>Parcel Boundary</p>	<p>National Grid Property</p> <p>Town Boundary</p> <p>State Boundary</p> <p>Gate</p> <p>Culvert</p> <p>Fence</p> <p>Stonewall</p> <p>Guardrail</p> <p>Environmental Justice 2020 Populations</p> <ul style="list-style-type: none"> Minority & Income Minority Income 	<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private
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1 inch = 100 feet

0 50 100 Feet

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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

Leominster, MA

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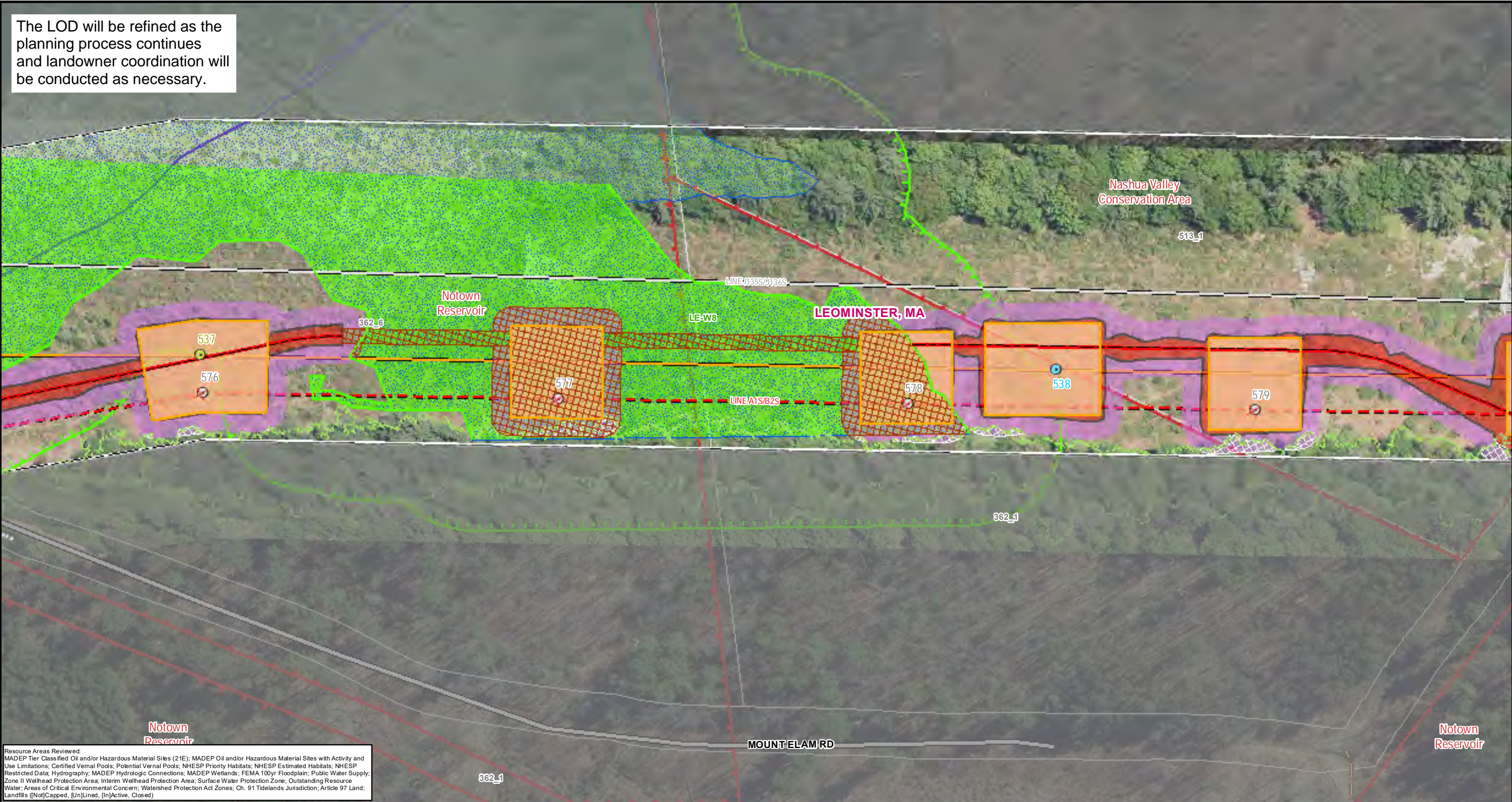
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User

nationalgrid

BSC GROUP

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<p>Index Map</p>	<p>Legend</p> <p>Construction Activities</p> <ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 		<p>Resource Areas</p> <ul style="list-style-type: none"> Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* 		<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	
	<p>Best Management Practices</p> <ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting 		<p>Existing Conditions</p> <ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Edge of ROW 		<p>Environmental Justice 2020 Populations</p> <ul style="list-style-type: none"> Minority & Income Minority Income 	

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design
September 12, 2022

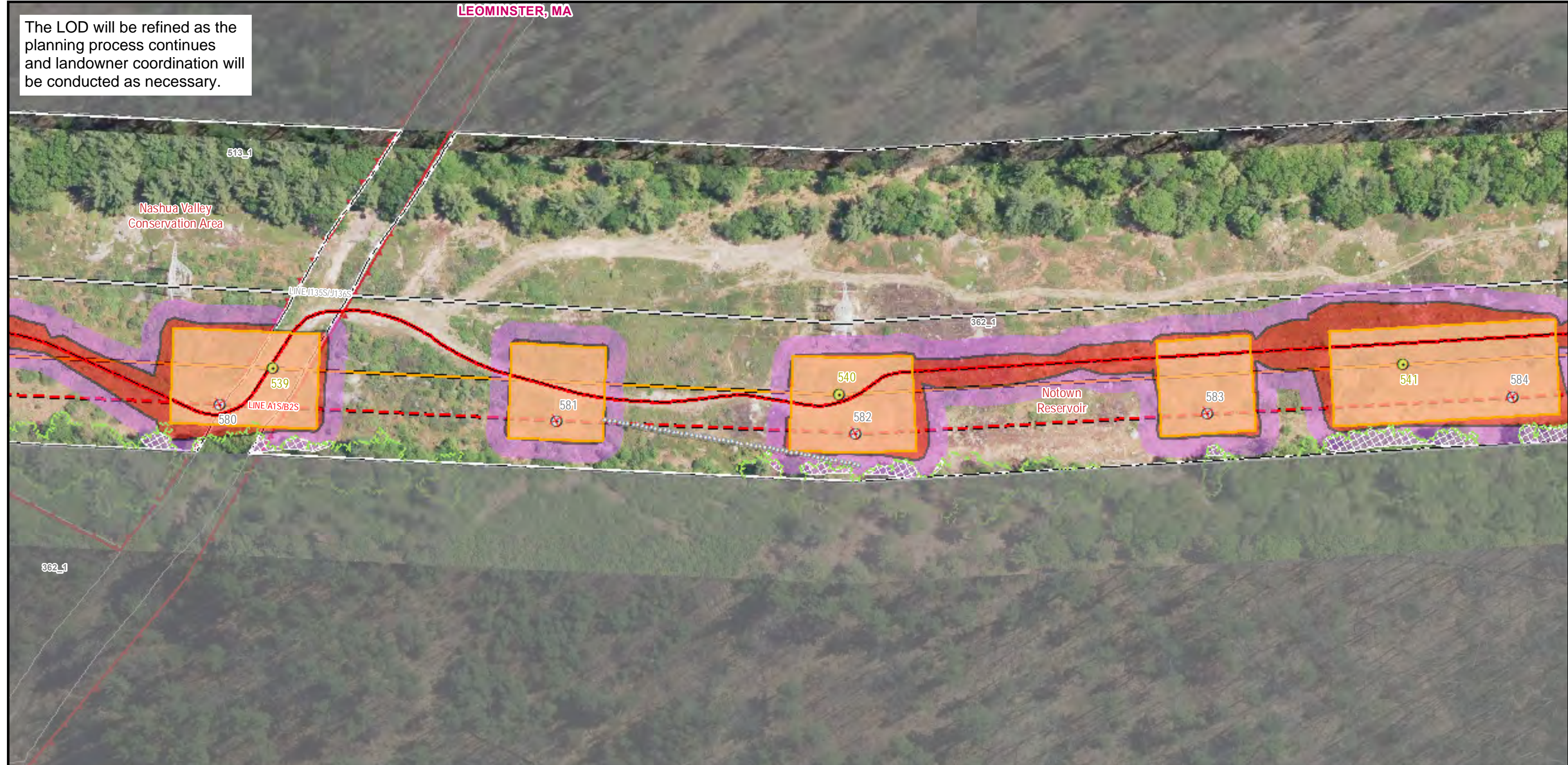
Leominster, MA
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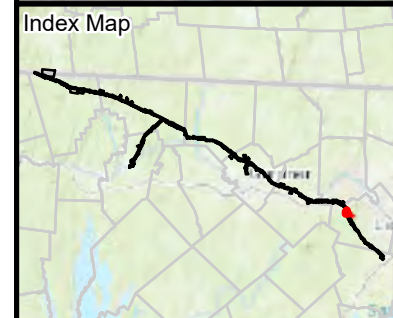
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Construction Activities		Resource Areas		Existing Conditions		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Proposed Centerline	Remove OH Line	DCR-State Parks & Recreation	Department of Fish & Game
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Proposed Retaining Wall	Proposed OH Line	DCR-Open Space	Department of Environmental Management
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Proposed Tree Removal	Standard Road Type 1 & 2	Department of Fish & Game	Department of Environmental Management
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Best Management Practices		Department of Fish & Game	Department of Environmental Management
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	Construction Matting		Department of Fish & Game	Department of Environmental Management
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams	Other Existing Transmission Centerline		Department of Fish & Game	Department of Environmental Management
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area	Edge of ROW		Department of Fish & Game	Department of Environmental Management
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*			Department of Fish & Game	Department of Environmental Management
	Construction Matting	Approximate Top of Bank	Certified Vernal Pools			Department of Fish & Game	Department of Environmental Management
	Other Existing Transmission Centerline	Approximate Ordinary High Water	Potential Vernal Pools			Department of Fish & Game	Department of Environmental Management
	Edge of ROW	Approximate Swale	NHESP Priority & Estimated Habitats			Department of Fish & Game	Department of Environmental Management
		Delineated Open Water*	NHESP Restricted Data			Department of Fish & Game	Department of Environmental Management
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Figure 2: MEPA General Purpose Plans
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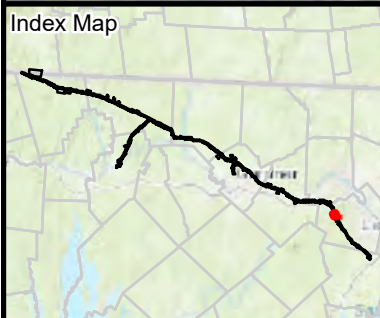
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Nashua Valley
 Conservation Area



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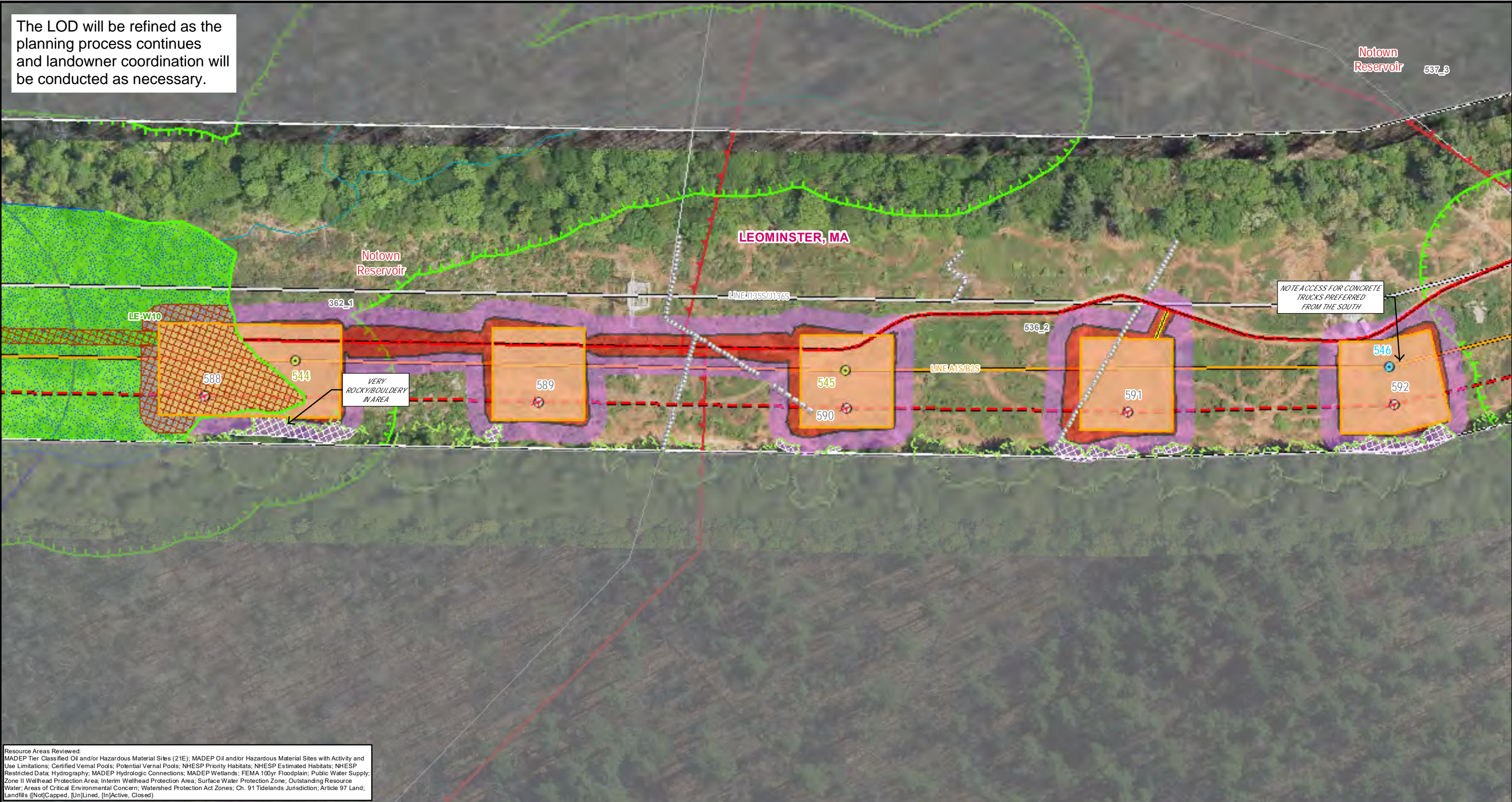
Leominster, MA
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 0 50 100
 Feet

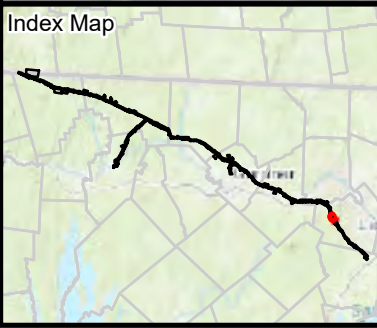
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

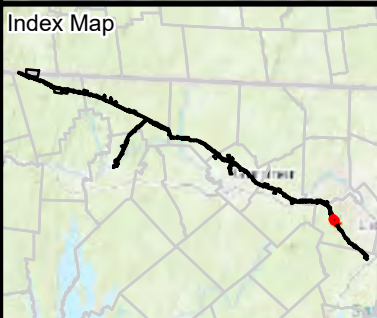
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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A1/B2 ACR PROJECT

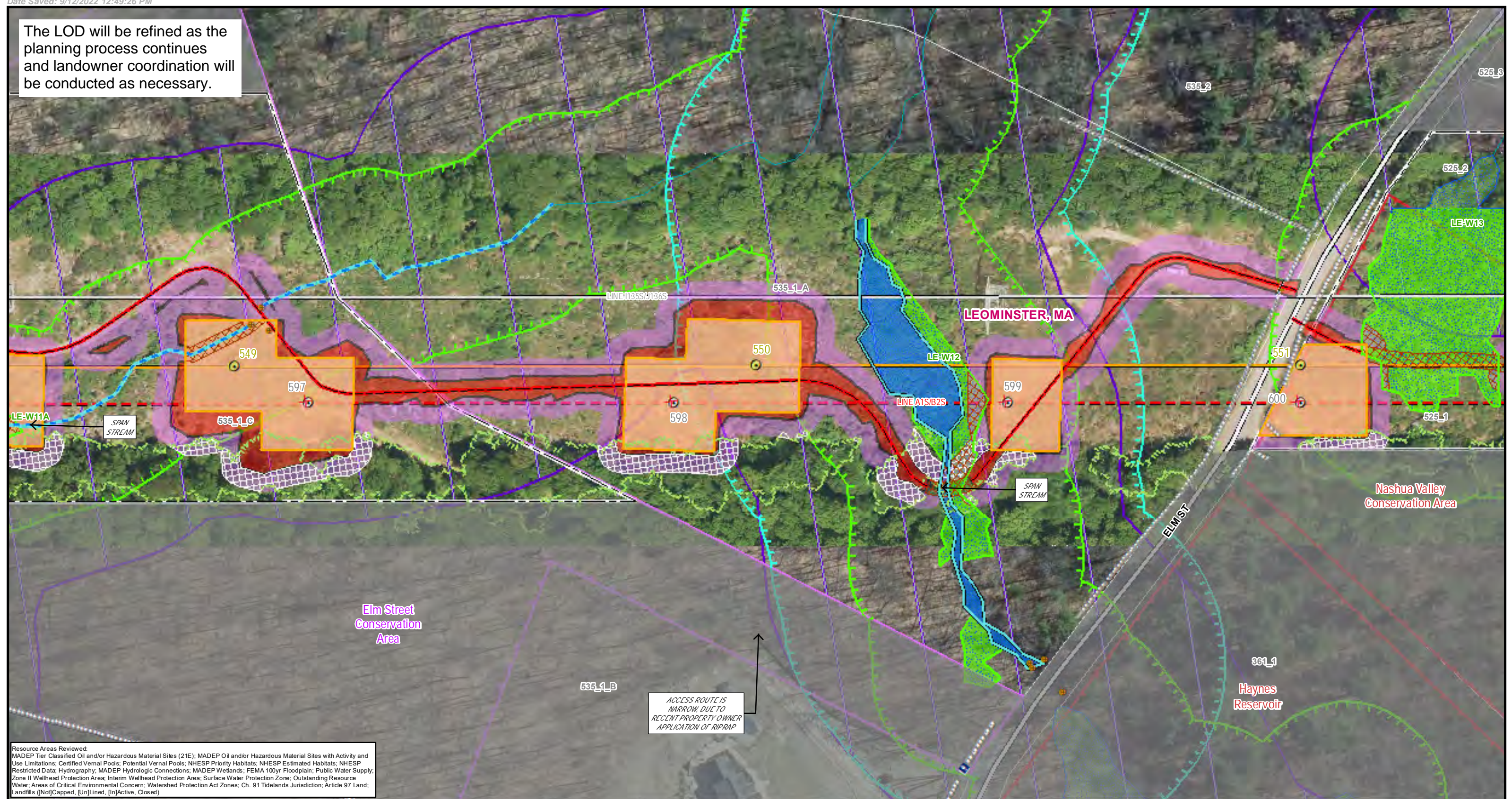
Figure 2: MEPA General Purpose Plans
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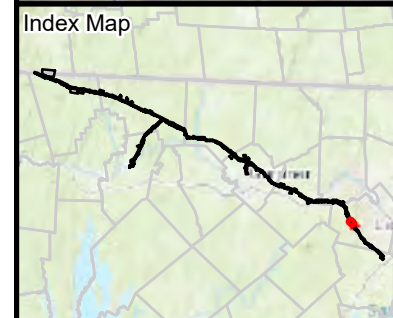
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A1/B2 ACR PROJECT

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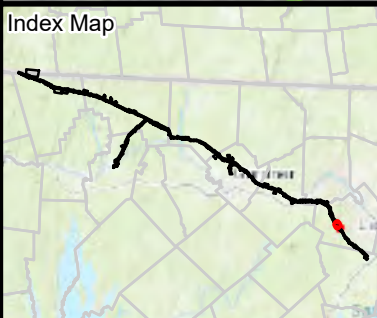
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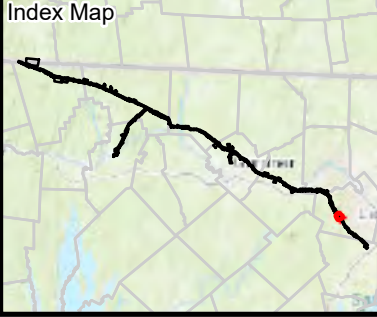
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A1/B2 ACR PROJECT

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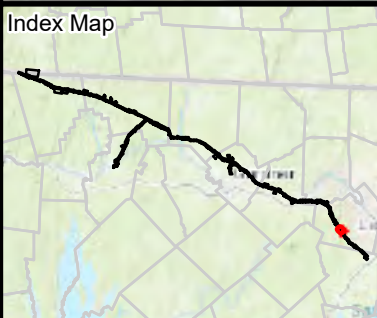
Leominster, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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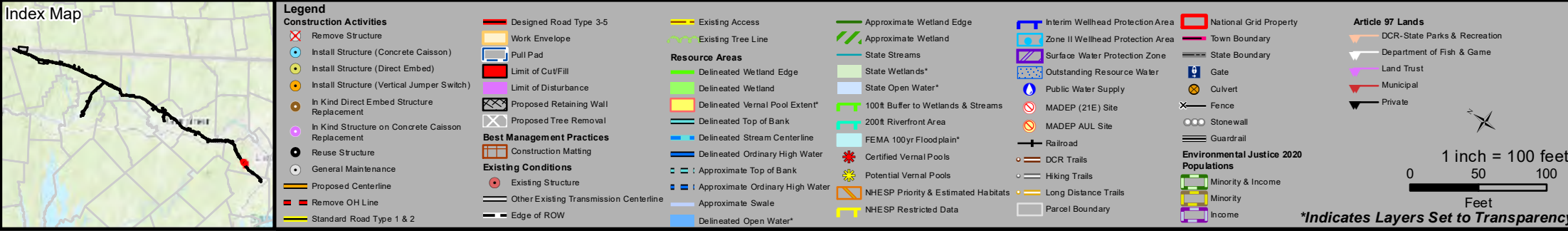
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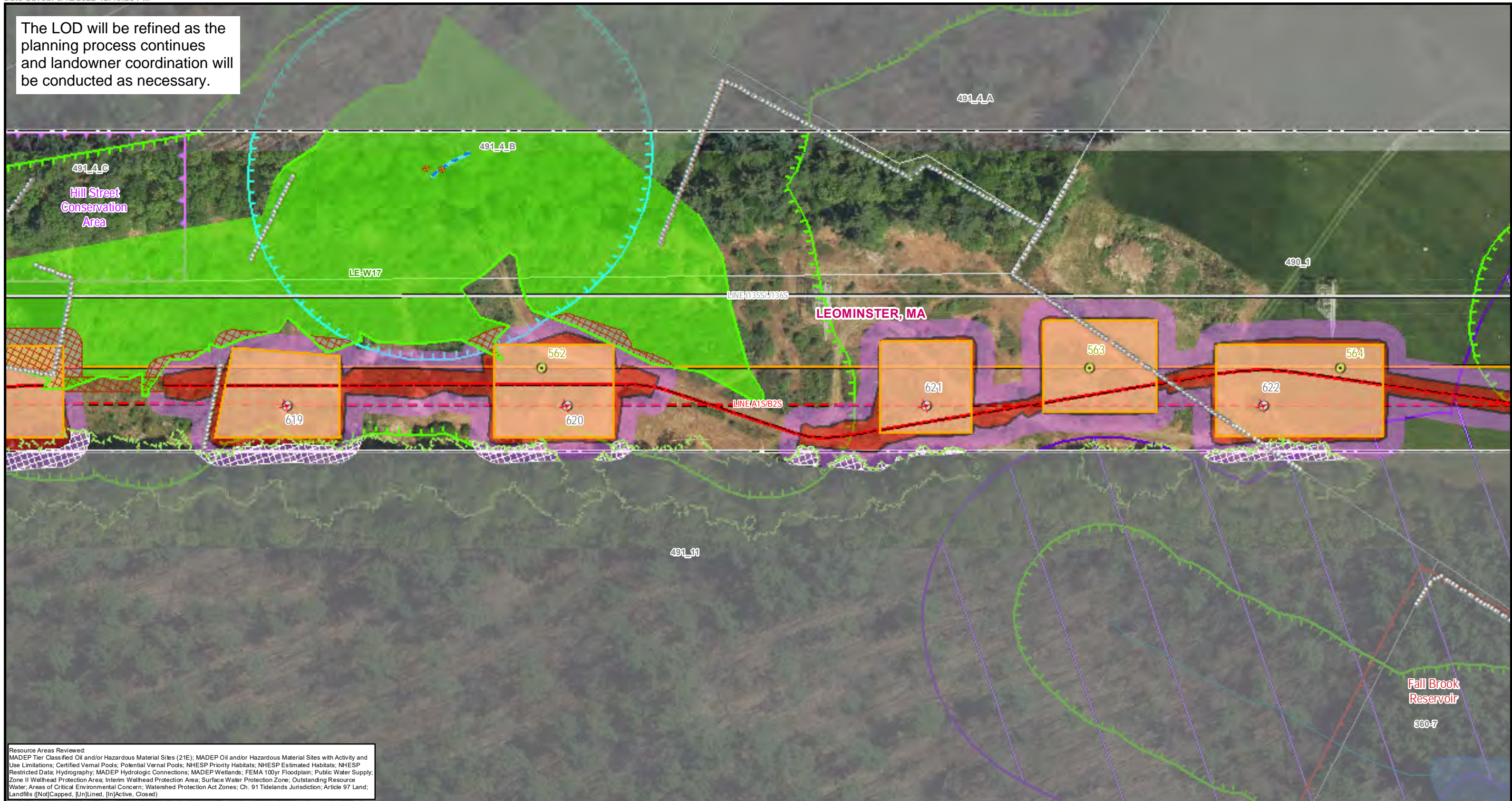


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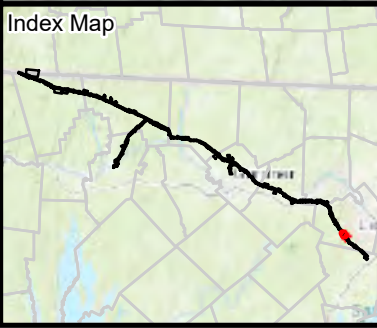
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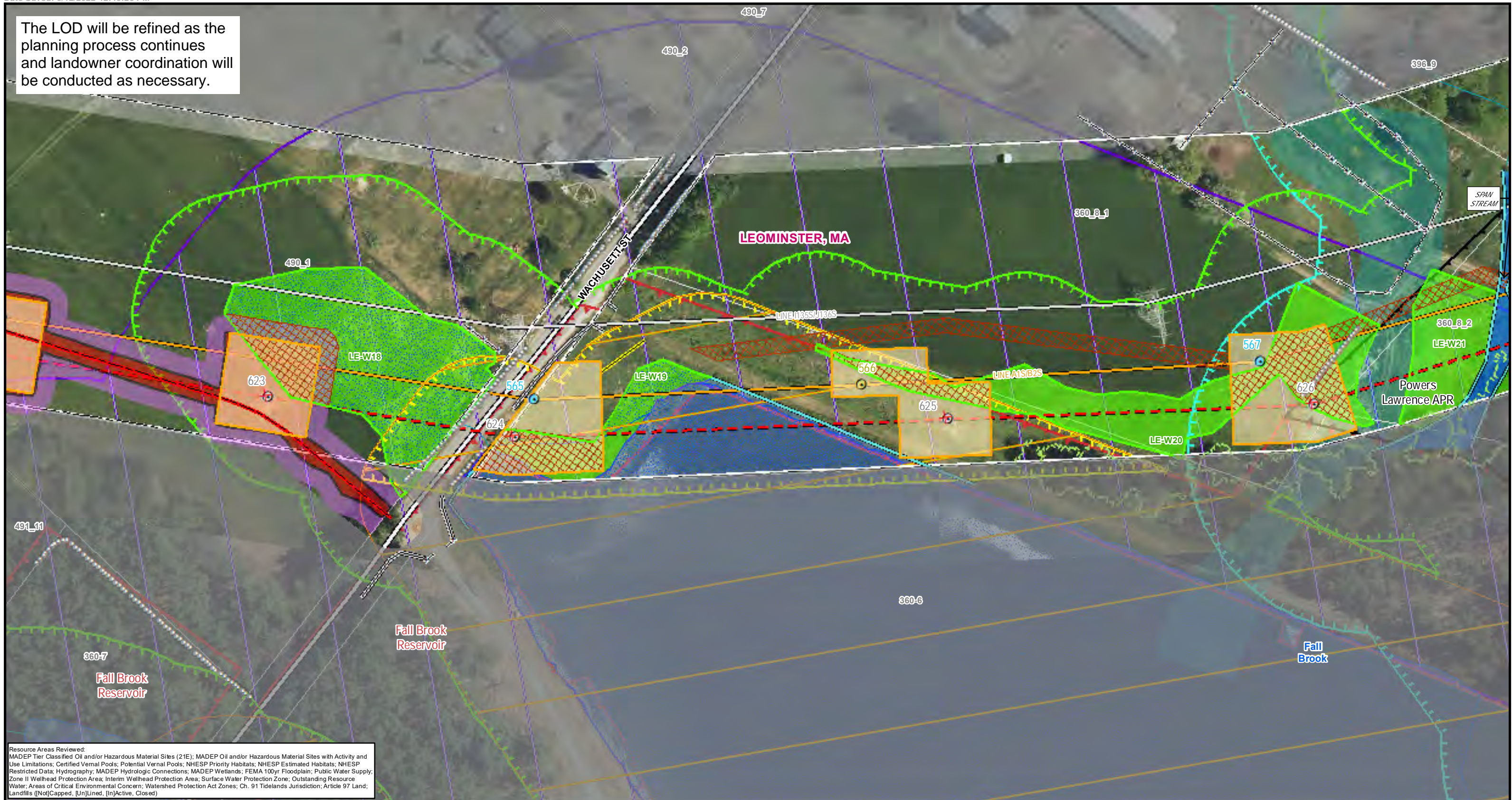
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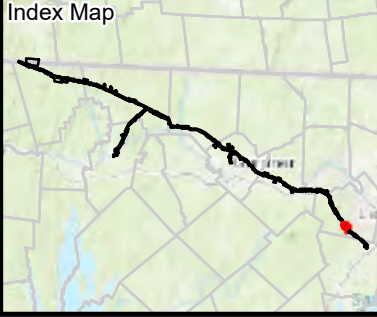
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50% Design

September 12, 2022

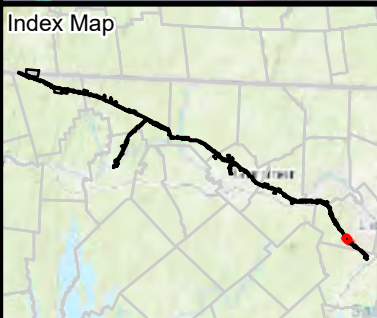
Leominster, MA
Page 133 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Resource Areas Reviewed:
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Construction Activities	Resource Areas	Best Management Practices	Existing Conditions	Article 97 Lands
Remove Structure	Approximate Wetland Edge	Proposed Retaining Wall	Existing Structure	DCR-State Parks & Recreation
Install Structure (Concrete Caisson)	State Streams	Proposed Tree Removal	Other Existing Transmission Centerline	Department of Fish & Game
Install Structure (Direct Embed)	Delineated Wetland Edge	Construction Matting	Edge of ROW	Land Trust
Install Structure (Vertical Jumper Switch)	Delineated Wetland	Construction Matting	Standard Road Type 1 & 2	Municipal
In Kind Direct Embed Structure Replacement	Delineated Vernal Pool Extent*	Construction Matting		Private
In Kind Structure on Concrete Caisson Replacement	Delineated Top of Bank	Construction Matting		
Reuse Structure	Delineated Stream Centerline	Construction Matting		
General Maintenance	Delineated Ordinary High Water	Construction Matting		
Proposed Centerline	Approximate Top of Bank	Construction Matting		
Remove OH Line	Approximate Ordinary High Water	Construction Matting		
Standard Road Type 1 & 2	Approximate Swale	Construction Matting		
	Delineated Open Water*	Construction Matting		
	Existing Access	Construction Matting		
	Existing Tree Line	Construction Matting		
	100ft Buffer to Wetlands & Streams	Construction Matting		
	200ft Riverfront Area	Construction Matting		
	FEMA 100yr Floodplain*	Construction Matting		
	Certified Vernal Pools	Construction Matting		
	Potential Vernal Pools	Construction Matting		
	NHESP Priority & Estimated Habitats	Construction Matting		
	NHESP Restricted Data	Construction Matting		
	Interim Wellhead Protection Area	Construction Matting		
	Zone II Wellhead Protection Area	Construction Matting		
	Surface Water Protection Zone	Construction Matting		
	Outstanding Resource Water	Construction Matting		
	Public Water Supply	Construction Matting		
	MADEP (21E) Site	Construction Matting		
	MADEP AUL Site	Construction Matting		
	Railroad	Construction Matting		
	DCR Trails	Construction Matting		
	Hiking Trails	Construction Matting		
	Long Distance Trails	Construction Matting		
	Parcel Boundary	Construction Matting		
	National Grid Property	Construction Matting		
	Town Boundary	Construction Matting		
	State Boundary	Construction Matting		
	Gate	Construction Matting		
	Culvert	Construction Matting		
	Fence	Construction Matting		
	Stonewall	Construction Matting		
	Guardrail	Construction Matting		
	Environmental Justice 2020 Populations	Construction Matting		
	Minority & Income	Construction Matting		
	Minority	Construction Matting		
	Income	Construction Matting		

A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

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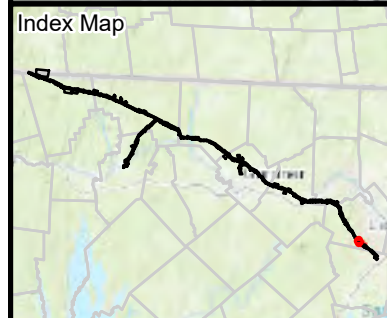
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nationalgrid
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

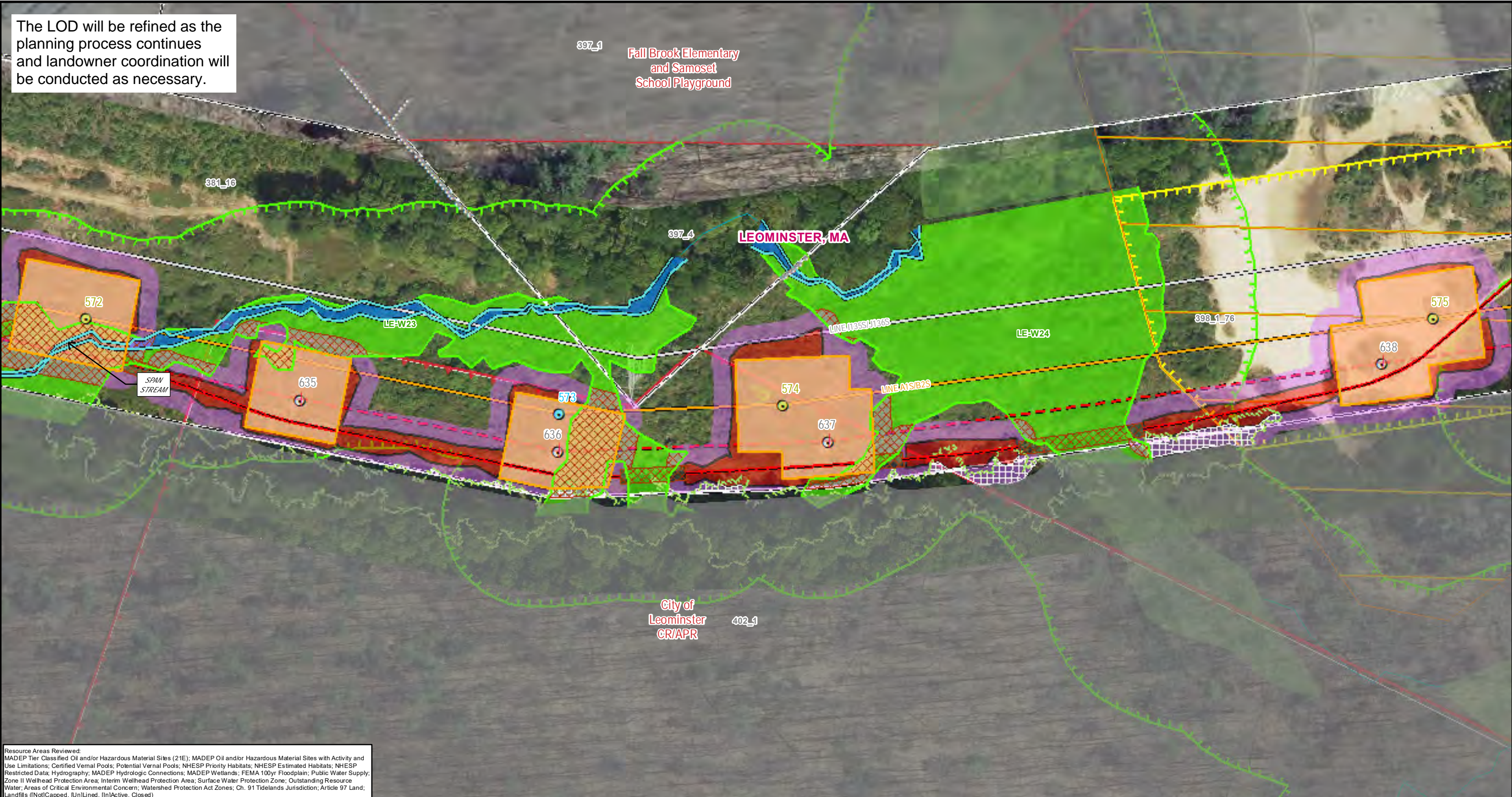
Leominster, MA
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1 inch = 100 feet

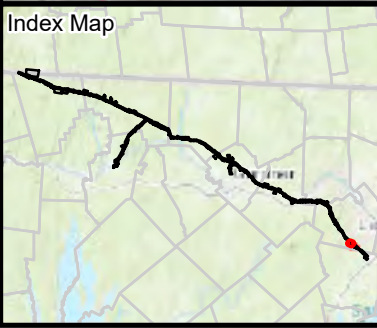
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Construction Activities	Resource Areas
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
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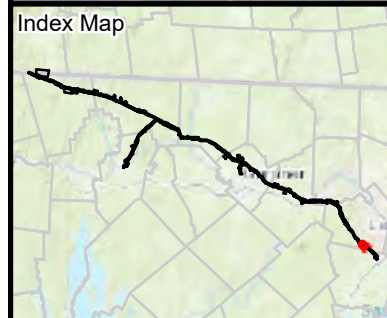
Leominster, MA
 Page 136 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities		Resource Areas		Existing Conditions		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Proposed Centerline	Existing Structure	National Grid Property	DCR-State Parks & Recreation
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Other Existing Transmission Centerline	Other Existing Transmission Centerline	Town Boundary	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	State Streams	State Wetlands*	Edge of ROW	Edge of ROW	State Boundary	Land Trust
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland Edge	State Open Water*	Standard Road Type 1 & 2	Standard Road Type 1 & 2	Gate	Municipal
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Wetland	100ft Buffer to Wetlands & Streams			Culvert	Private
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Vernal Pool Extent*	200ft Riverfront Area			Fence	
Reuse Structure	Proposed Tree Removal	Delineated Top of Bank	FEMA 100yr Floodplain*			Stonewall	
General Maintenance	Best Management Practices	Delineated Stream Centerline	Certified Vernal Pools			Guardrail	
	Construction Matting	Delineated Ordinary High Water	Potential Vernal Pools				
	Existing Conditions	Approximate Top of Bank	NHESP Priority & Estimated Habitats				
	Remove OH Line	Approximate Ordinary High Water	NHESP Restricted Data				
	Standard Road Type 1 & 2	Approximate Swale					
		Delineated Open Water*					

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

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1 inch = 100 feet

Feet

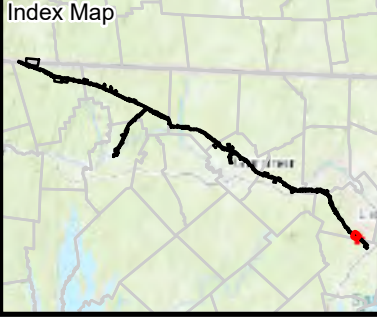
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0 50 100 Feet
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A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
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Page 138 of 168

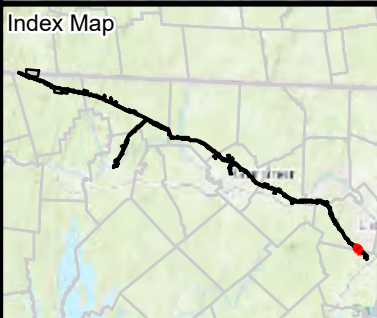
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Delineated Wetland Edge	Approximate Wetland Edge	Minority & Income	Interim Wellhead Protection Area
Install Structure (Concrete Caisson)	Work Envelope	Delineated Wetland	Approximate Wetland	Minority	Zone II Wellhead Protection Area
Install Structure (Direct Embed)	Pull Pad	Delineated Vernal Pool Extent*	State Streams	Income	Surface Water Protection Zone
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Stream Centerline	State Wetlands*		Outstanding Resource Water
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Ordinary High Water	State Open Water*		Public Water Supply
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Approximate Top of Bank	100ft Buffer to Wetlands & Streams		MADEP (21E) Site
Reuse Structure	Proposed Tree Removal	Delineated Open Water*	200ft Riverfront Area		MADEP AUL Site
General Maintenance	Best Management Practices		FEMA 100yr Floodplain*		Railroad
Proposed Centerline	Construction Matting		Certified Vernal Pools		DCR Trails
Remove OH Line	Existing Conditions		Potential Vernal Pools		Hiking Trails
Standard Road Type 1 & 2	Existing Structure		NHESP Priority & Estimated Habitats		Long Distance Trails
	Other Existing Transmission Centerline		NHESP Restricted Data		Parcel Boundary
	Edge of ROW				

A1/B2 ACR PROJECT
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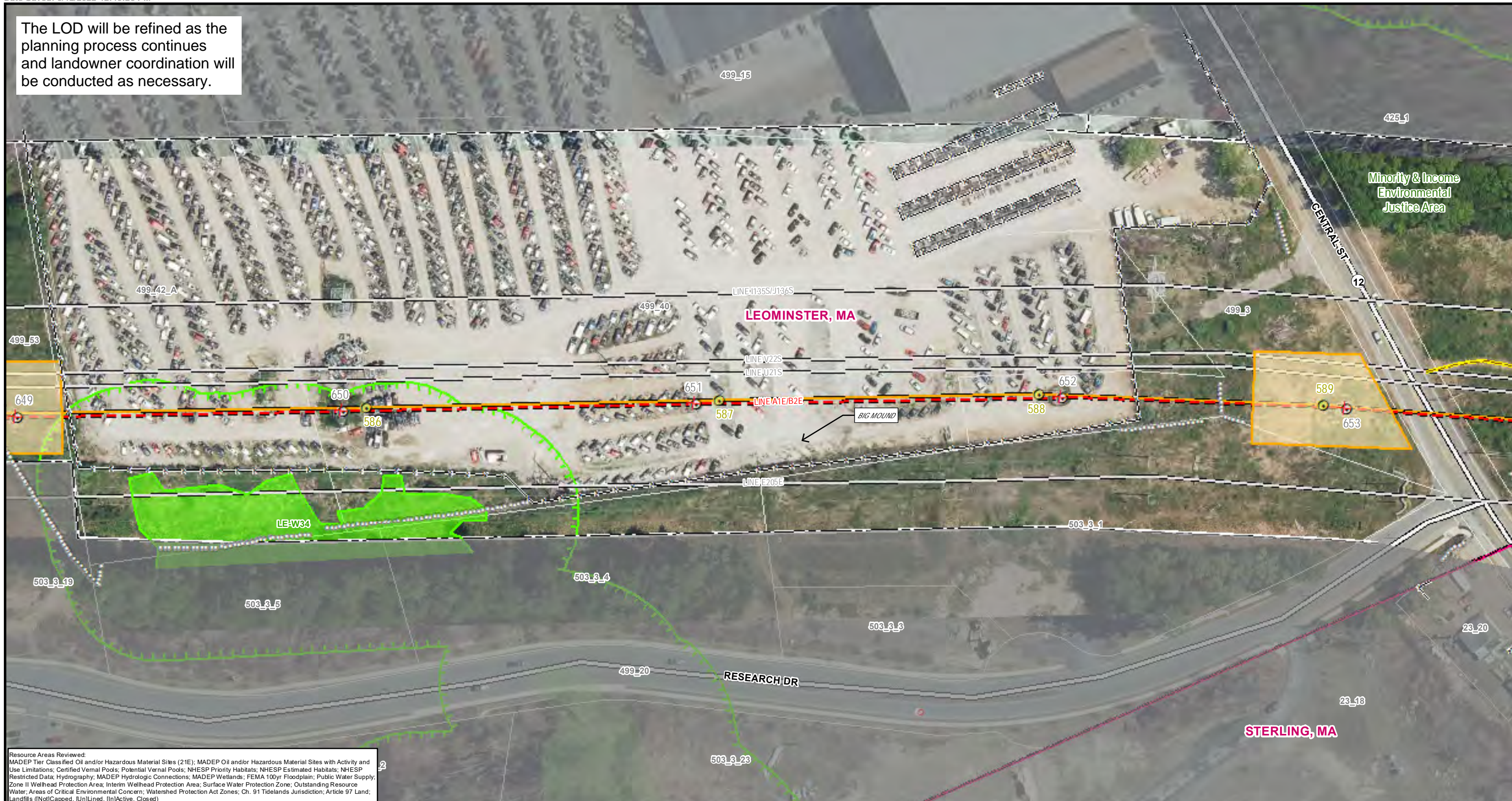
Leominster, MA
 Page 139 of 168

1 inch = 100 feet
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 Feet

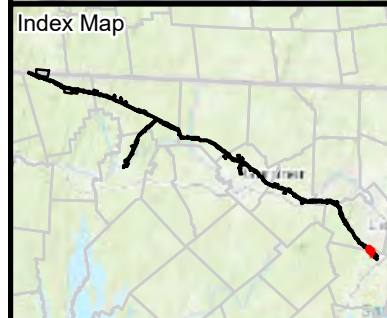
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Figure 2: MEPA General Purpose Plans

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Leominster & Sterling, MA

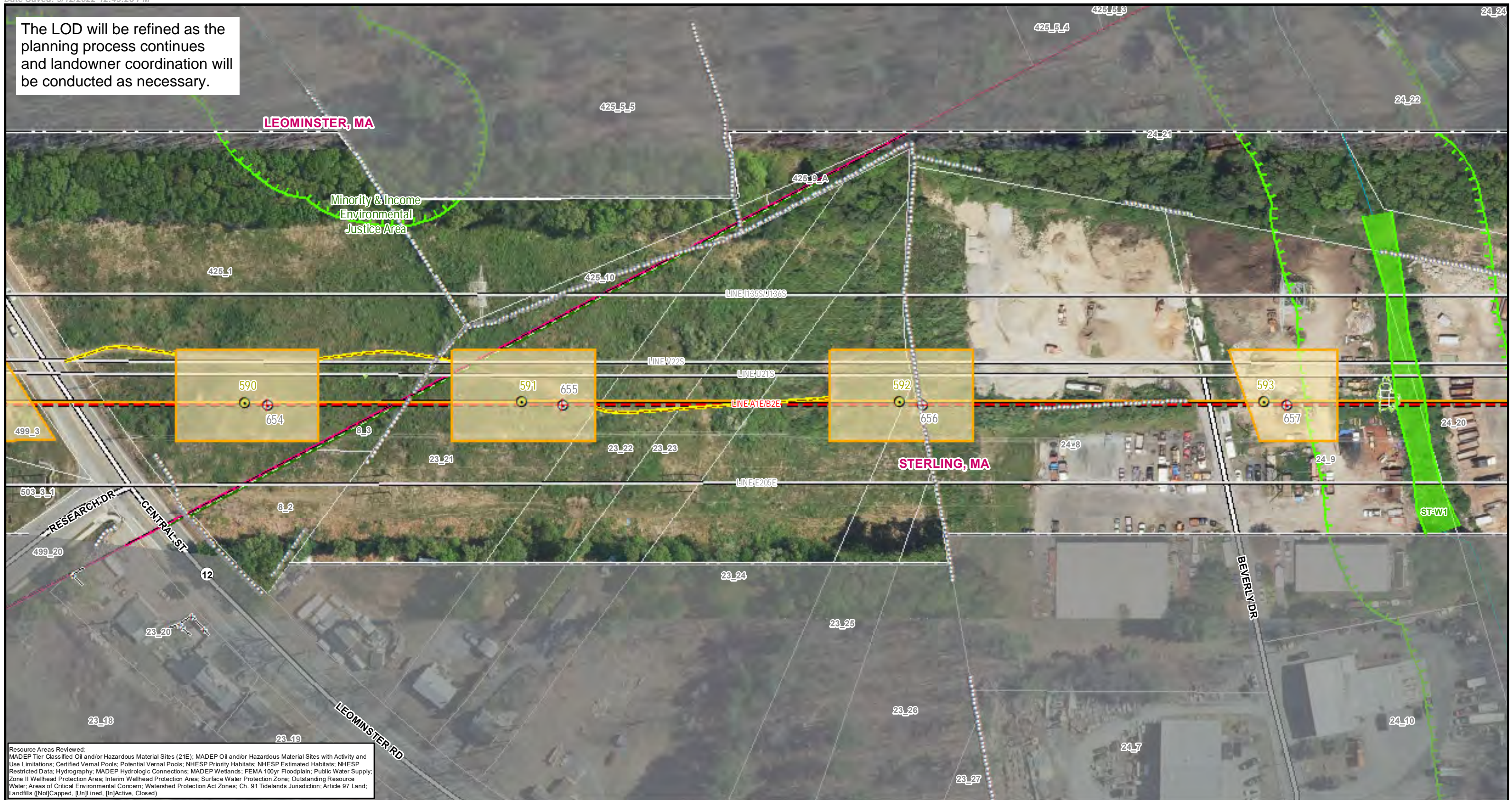
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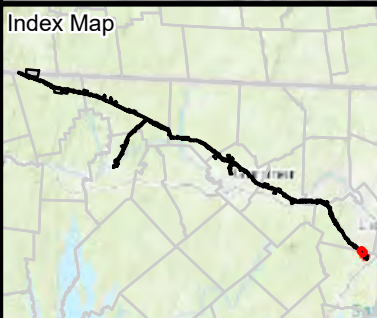
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Best Management Practices	Existing Conditions
<ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Construction Matting 	<ul style="list-style-type: none"> Existing Structure Other Existing Transmission Centerline Edge of ROW
Design	Environmental Justice 2020 Populations
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal 	<ul style="list-style-type: none"> Minority & Income Minority Income
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<ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary

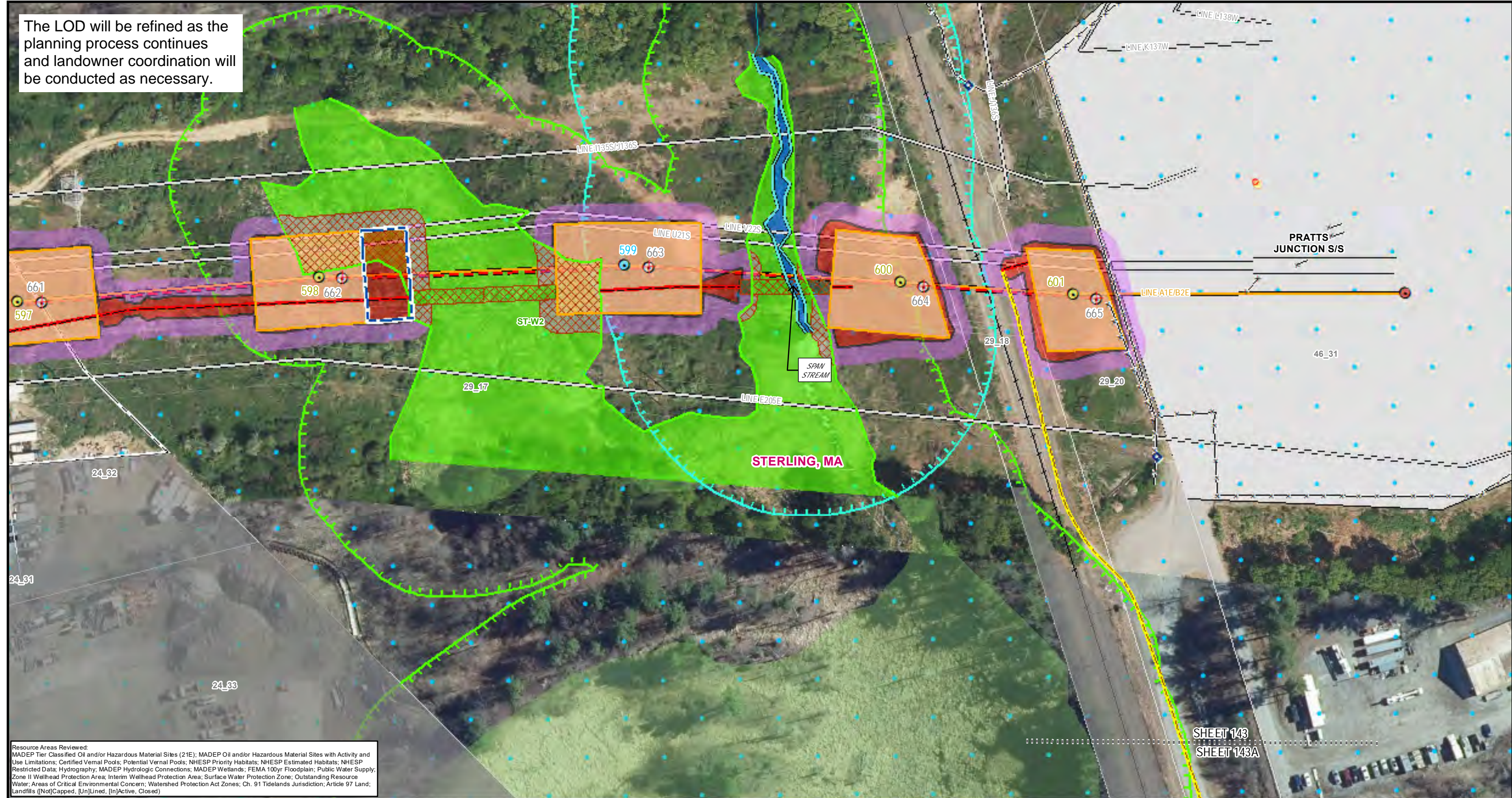
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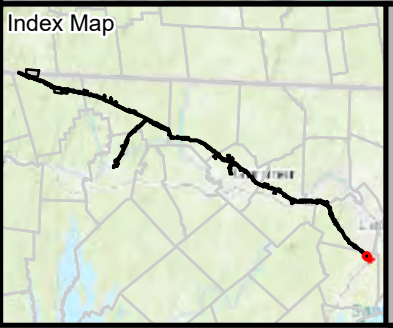
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Interim Wellhead Protection Area	National Grid Property
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Zone II Wellhead Protection Area	Town Boundary
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Surface Water Protection Zone	State Boundary
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*	Outstanding Resource Water	Gate
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*	Public Water Supply	Culvert
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Top of Bank	100ft Buffer to Wetlands & Streams	MADEP (21E) Site	Fence
Reuse Structure	Proposed Tree Removal	Delineated Stream Centerline	200ft Riverfront Area	MADEP AUL Site	Stonewall
General Maintenance	Best Management Practices	Delineated Ordinary High Water	FEMA 100yr Floodplain*	Railroad	Guardrail
Proposed Centerline	Construction Matting	Approximate Top of Bank	Certified Vernal Pools	DCR Trails	
Remove OH Line	Existing Conditions	Approximate Ordinary High Water	Potential Vernal Pools	Hiking Trails	
Standard Road Type 1 & 2	Existing Structure	Delineated Open Water*	NHESP Priority & Estimated Habitats	Long Distance Trails	
	Other Existing Transmission Centerline		NHESP Restricted Data	Parcel Boundary	
	Edge of ROW				

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

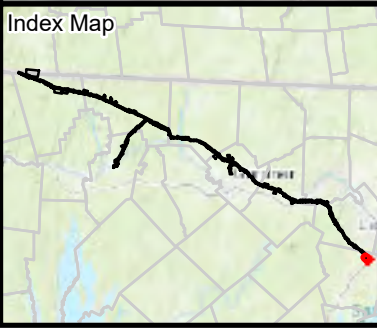
Sterling, MA
 Page 143 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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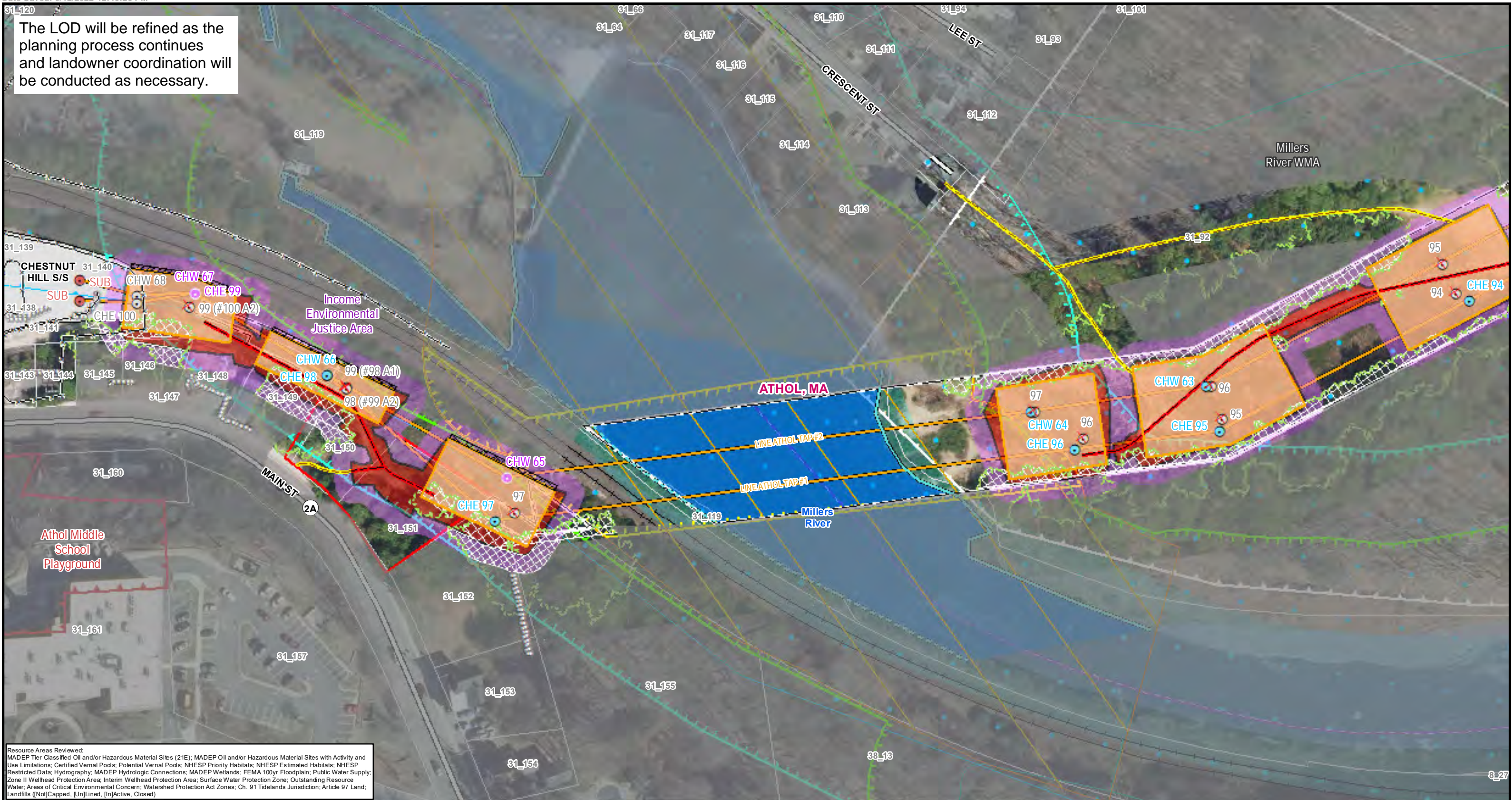
Legend		Resource Areas		Construction Activities		Best Management Practices		Existing Conditions		Article 97 Lands		Environmental Justice 2020 Populations	
	Designed Road Type 3-5		Existing Access		Approximate Wetland Edge		Remove Structure		Existing Structure		DCR-State Parks & Recreation		Minority & Income
	Work Envelope		Existing Tree Line		Approximate Wetland		Install Structure (Concrete Caisson)		Other Existing Transmission Centerline		Department of Fish & Game		Minority
	Pull Pad		Delineated Wetland Edge		State Streams		Install Structure (Direct Embed)		Proposed Retaining Wall		Land Trust		Income
	Limit of Cut/Fill		Delineated Wetland		State Wetlands*		Install Structure (Vertical Jumper Switch)		Proposed Tree Removal		Municipal		
	Limit of Disturbance		Delineated Vernal Pool Extent*		State Open Water*		In Kind Direct Embed Structure Replacement		Best Management Practices		Private		
	Proposed Retaining Wall		100ft Buffer to Wetlands & Streams		100ft Buffer to Wetlands & Streams		In Kind Structure on Concrete Caisson Replacement		Construction Matting				
	Proposed Tree Removal		200ft Riverfront Area		FEMA 100yr Floodplain*		In Kind Structure on Concrete Caisson Replacement		Construction Matting				
	Best Management Practices		Delineated Stream Centerline		Certified Vernal Pools		Reuse Structure		Construction Matting				
	Existing Conditions		Delineated Ordinary High Water		Potential Vernal Pools		General Maintenance		Construction Matting				
	Proposed Centerline		Approximate Top of Bank		NHESP Priority & Estimated Habitats		Proposed Centerline		Construction Matting				
	Remove OH Line		Approximate Ordinary High Water		NHESP Restricted Data		Remove OH Line		Construction Matting				
	Standard Road Type 1 & 2		Approximate Swale				Standard Road Type 1 & 2		Construction Matting				
			Delineated Open Water*						Construction Matting				
									Construction Matting				

A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

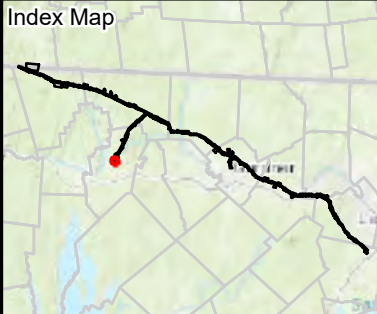
Sterling, MA
Page 143A of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities		Resource Areas		Existing Conditions		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Proposed Centerline	Existing Structure	Interim Wellhead Protection Area	National Grid Property
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Remove OH Line	Other Existing Transmission Centerline	Zone II Wellhead Protection Area	Town Boundary
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Standard Road Type 1 & 2	Edge of ROW	Surface Water Protection Zone	Municipal Boundary
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*			Outstanding Resource Water	Private
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*			Public Water Supply	
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	100ft Buffer to Wetlands & Streams	100ft Buffer to Wetlands & Streams			MADEP (21E) Site	
Reuse Structure	Proposed Tree Removal	200ft Riverfront Area	200ft Riverfront Area			MADEP AUL Site	
General Maintenance	Construction Matting	FEMA 100yr Floodplain*	FEMA 100yr Floodplain*			Railroad	
	Best Management Practices	Certified Vernal Pools	Certified Vernal Pools			DCR Trails	
	Existing Conditions	Potential Vernal Pools	Potential Vernal Pools			Hiking Trails	
		NHESP Priority & Estimated Habitats	NHESP Priority & Estimated Habitats			Long Distance Trails	
		NHESP Restricted Data	NHESP Restricted Data			Parcel Boundary	

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

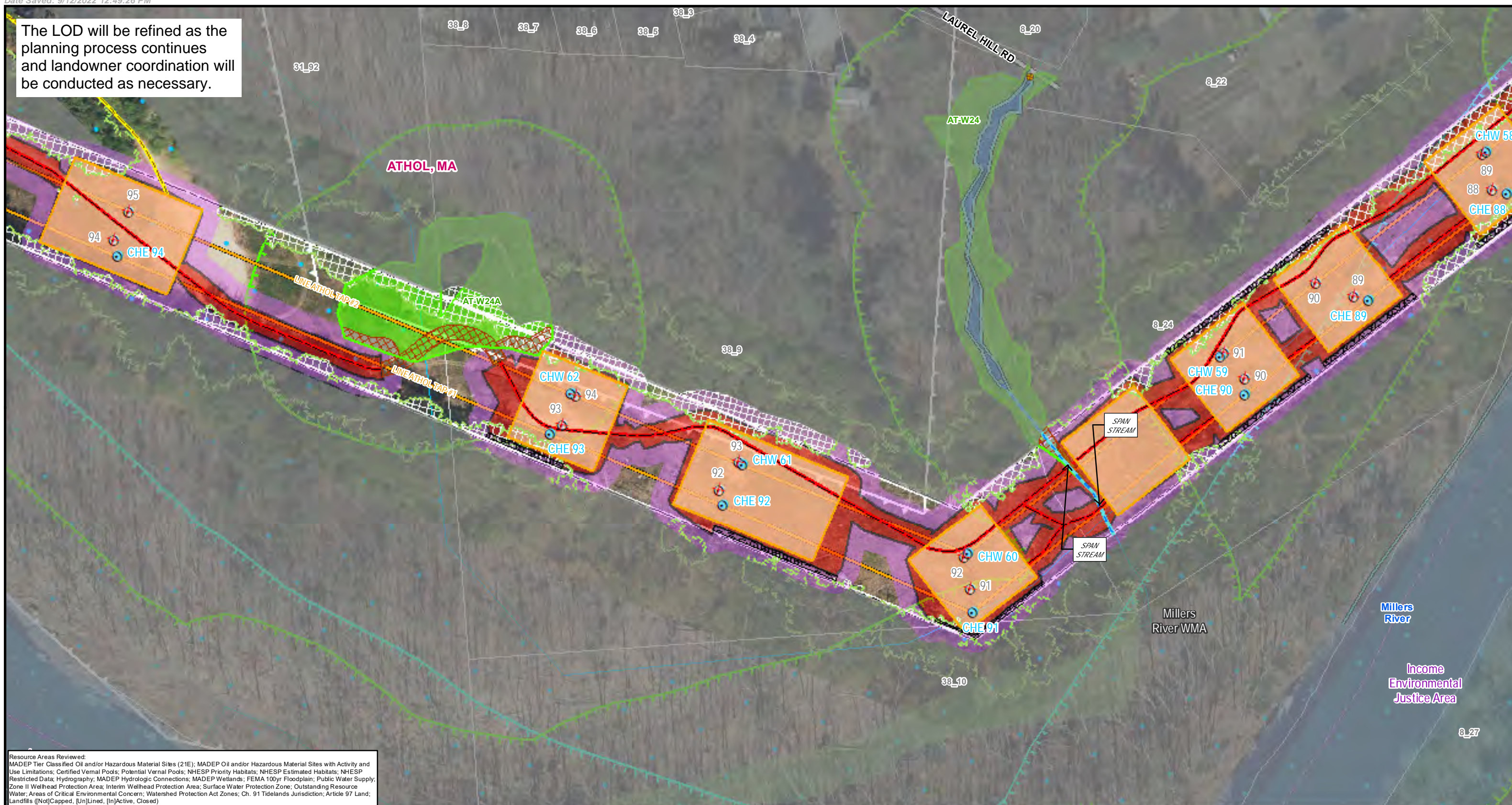
September 12, 2022

Athol, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Index Map 	Legend Construction Activities Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW Existing Access Existing Tree Line Resource Areas Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private
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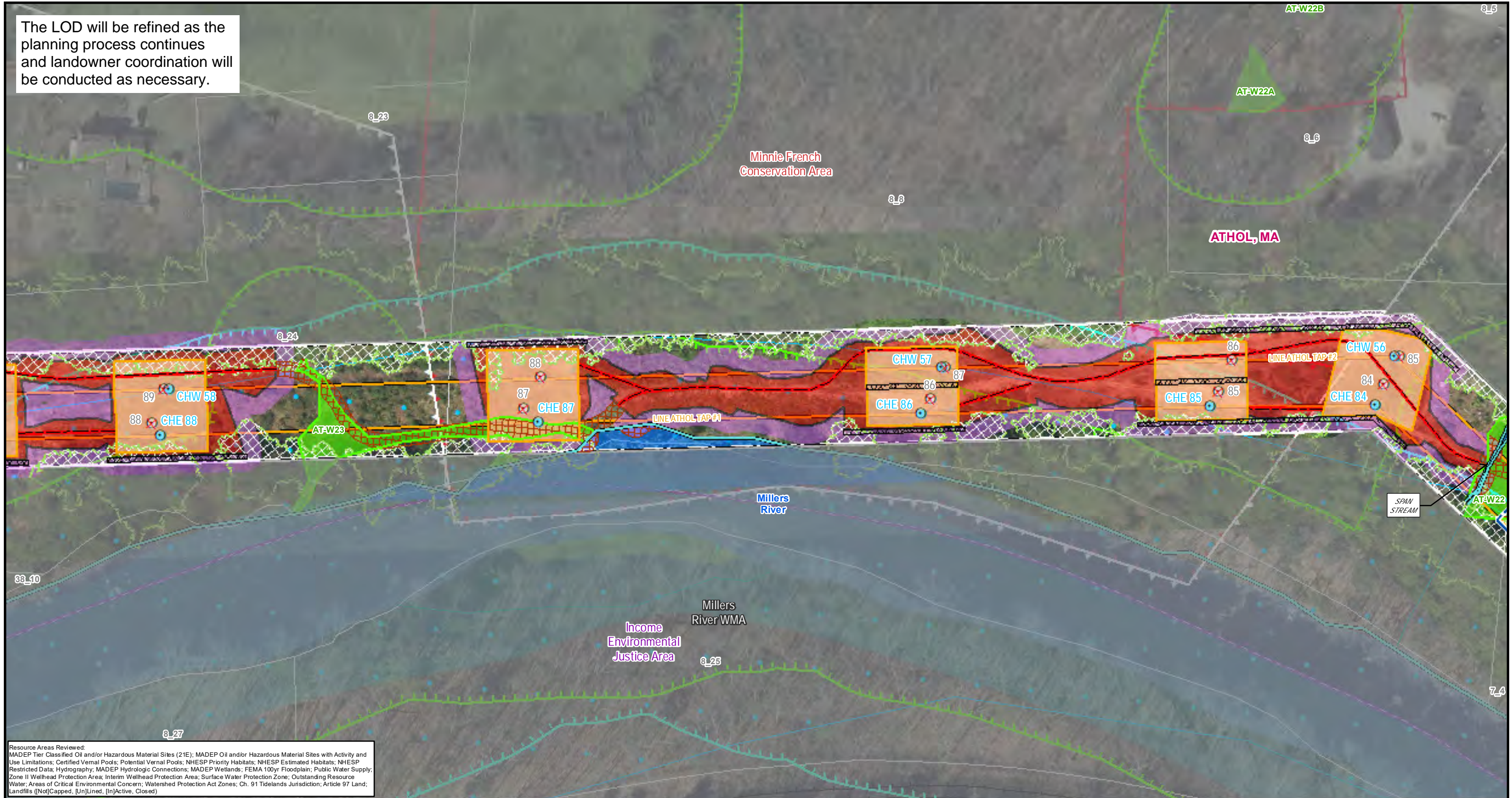
A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

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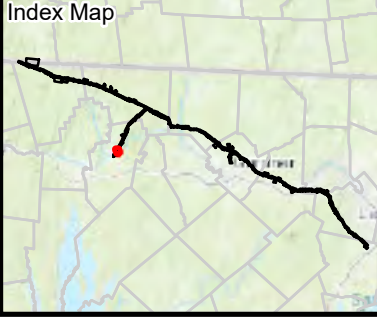
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Approximate Swale Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income
<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	

A1/B2 ACR PROJECT
Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

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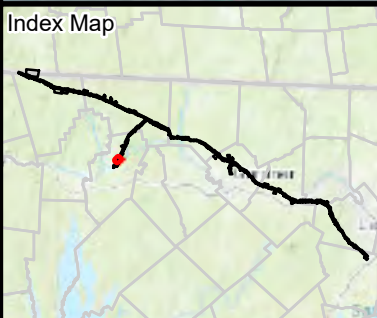
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1 inch = 100 feet
 0 50 100
 Feet
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Legend

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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities	
Remove Structure	Designed Road Type 3-5
Work Envelope	Pull Pad
Install Structure (Concrete Caisson)	Limit of Cut/Fill
Install Structure (Direct Embed)	Limit of Disturbance
Install Structure (Vertical Jumper Switch)	Proposed Retaining Wall
In Kind Direct Embed Structure Replacement	Proposed Tree Removal
In Kind Structure on Concrete Caisson Replacement	Best Management Practices
Reuse Structure	Construction Matting
General Maintenance	Existing Conditions
Proposed Centerline	Existing Structure
Remove OH Line	Other Existing Transmission Centerline
Standard Road Type 1 & 2	Approximate Swale
	Edge of ROW

Existing Access	Approximate Wetland Edge
Existing Tree Line	Approximate Wetland
Delineated Wetland Edge	State Streams
Delineated Wetland	State Wetlands*
Delineated Vernal Pool Extent*	State Open Water*
Delineated Top of Bank	100ft Buffer to Wetlands & Streams
Delineated Stream Centerline	200ft Riverfront Area
Delineated Ordinary High Water	FEMA 100yr Floodplain*
Approximate Top of Bank	Certified Vernal Pools
Approximate Ordinary High Water	Potential Vernal Pools
Approximate Swale	NHESP Priority & Estimated Habitats
Delineated Open Water*	NHESP Restricted Data

Interim Wellhead Protection Area	National Grid Property
Zone II Wellhead Protection Area	Town Boundary
Surface Water Protection Zone	State Boundary
Outstanding Resource Water	Gate
Public Water Supply	Culvert
MADEP (21E) Site	Fence
MADEP AUL Site	Stonewall
Railroad	Guardrail
DCR Trails	Article 97 Lands
Hiking Trails	DCR-State Parks & Recreation
Long Distance Trails	Department of Fish & Game
Parcel Boundary	Land Trust
	Municipal
	Private
	Environmental Justice 2020 Populations
	Minority & Income
	Minority
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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design September 12, 2022

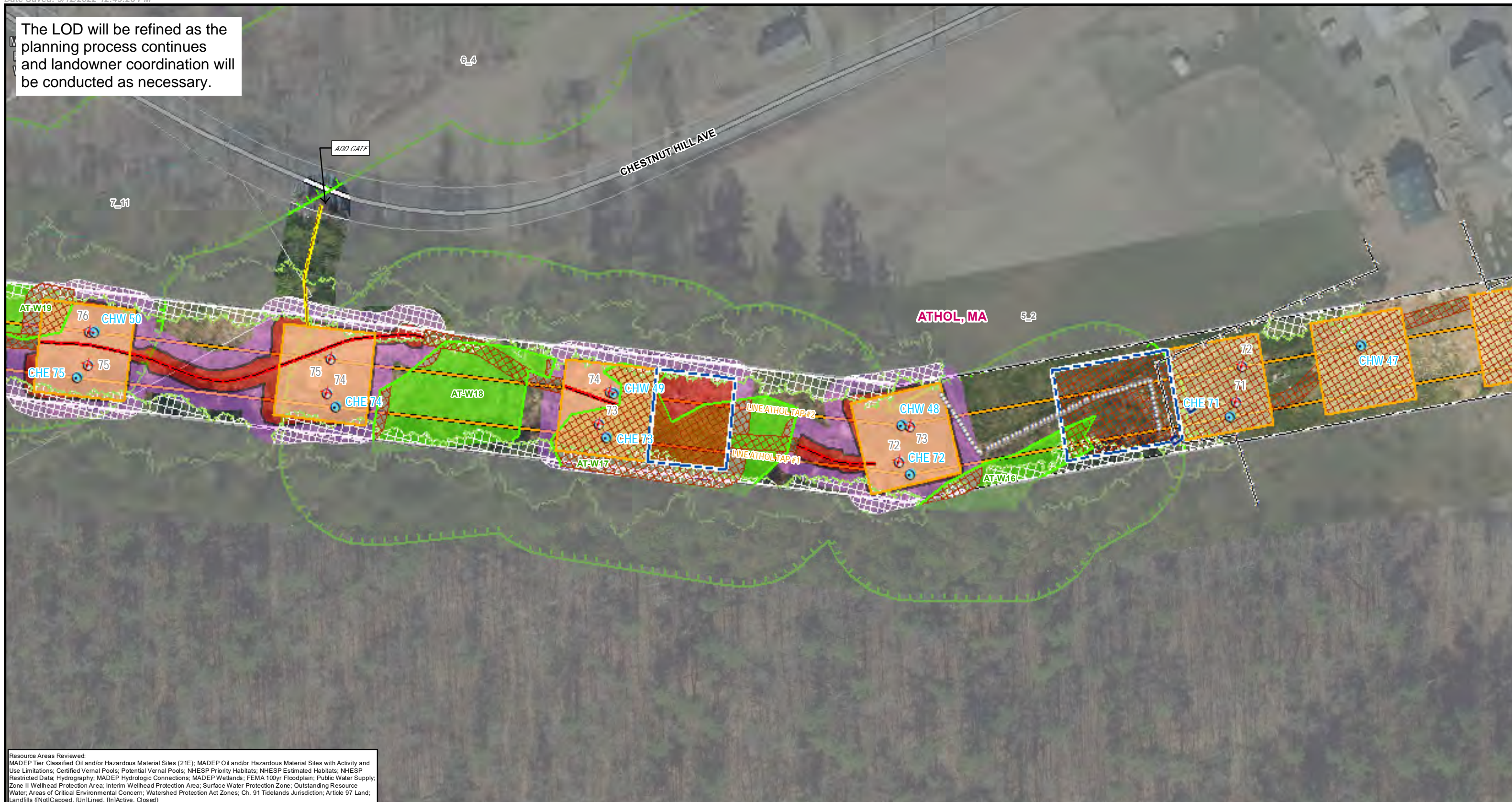
Athol, MA
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**Indicates Layers Set to Transparency*

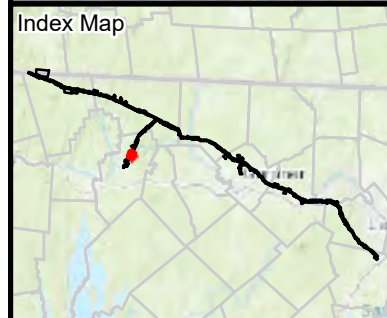
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Work Envelope	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Minority
Install Structure (Concrete Caisson)	Pull Pad	Limit of Disturbance	State Streams	Income	Income
Install Structure (Direct Embed)	Limit of Cut/Fill	Delineated Wetland Edge	State Wetlands*		
Install Structure (Vertical Jumper Switch)	Limit of Disturbance	Delineated Wetland	State Open Water*		
In Kind Direct Embed Structure Replacement	Proposed Retaining Wall	Delineated Vernal Pool Extent*	100ft Buffer to Wetlands & Streams		
In Kind Structure on Concrete Caisson Replacement	Proposed Tree Removal	Delineated Top of Bank	200ft Riverfront Area		
Reuse Structure	Best Management Practices	Delineated Stream Centerline	FEMA 100yr Floodplain*		
General Maintenance	Construction Matting	Delineated Ordinary High Water	Certified Vernal Pools		
Proposed Centerline	Existing Conditions	Approximate Top of Bank	Potential Vernal Pools		
Remove OH Line	Existing Structure	Approximate Ordinary High Water	NHESP Priority & Estimated Habitats		
Standard Road Type 1 & 2	Other Existing Transmission Centerline	Approximate Swale	NHESP Restricted Data		
	Edge of ROW	Delineated Open Water*			

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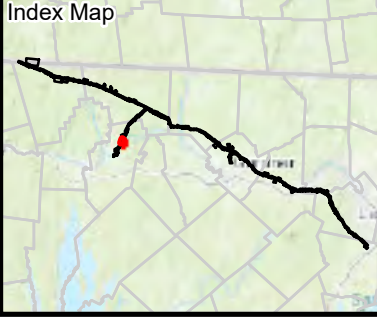
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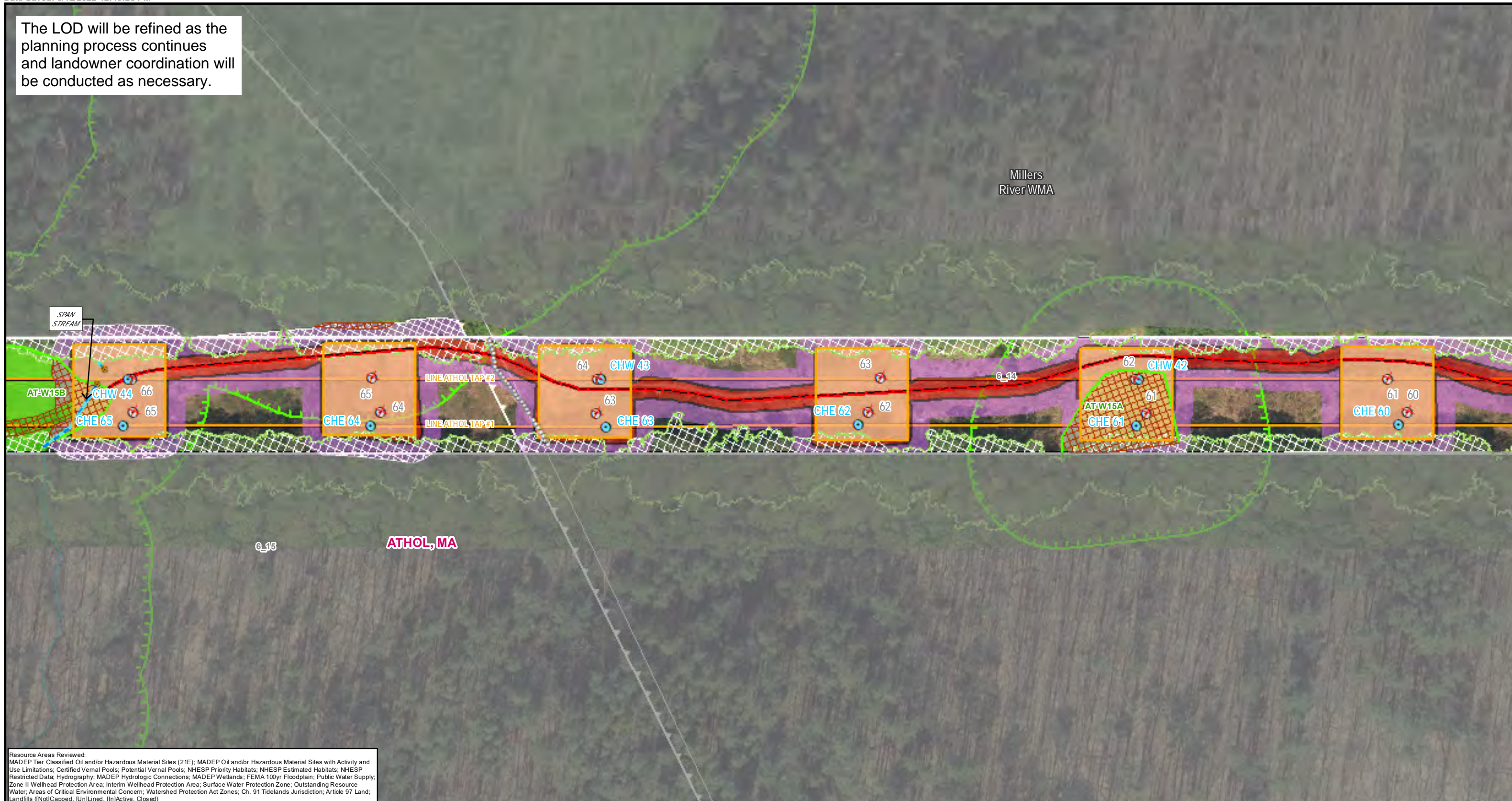
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<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
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Figure 2: MEPA General Purpose Plans
50% Design
September 12, 2022

Athol, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Index Map

<p>Legend</p> <p>Construction Activities</p> <ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<p>Resource Areas</p> <ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data 	<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income 	<p>Article 97 Lands</p> <ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private
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Feet

**Indicates Layers Set to Transparency*

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

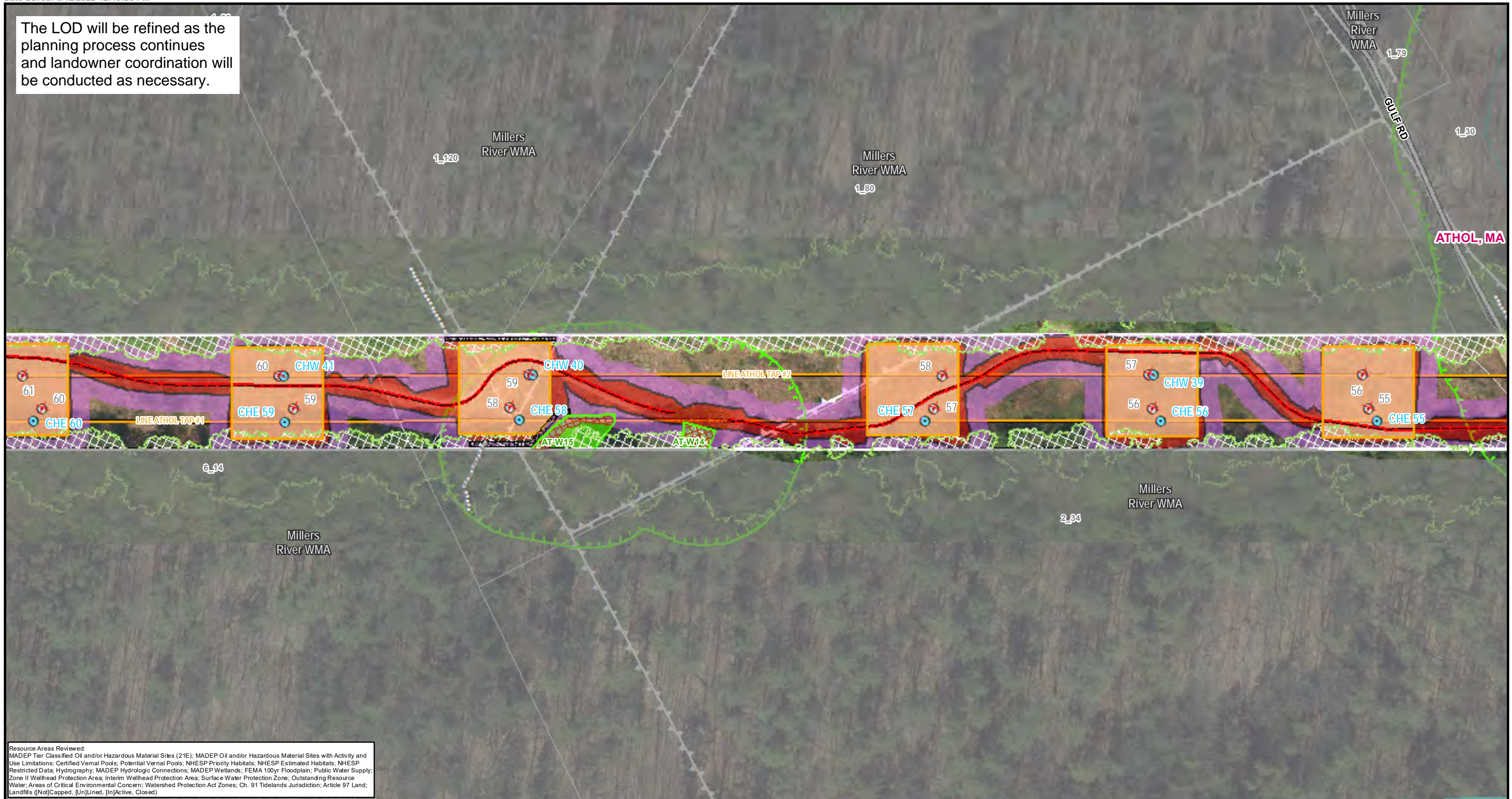
Athol, MA

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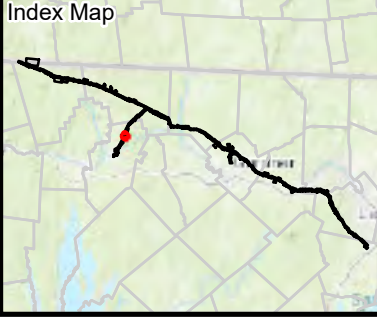
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A1/B2 ACR PROJECT

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50% Design

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Athol, MA

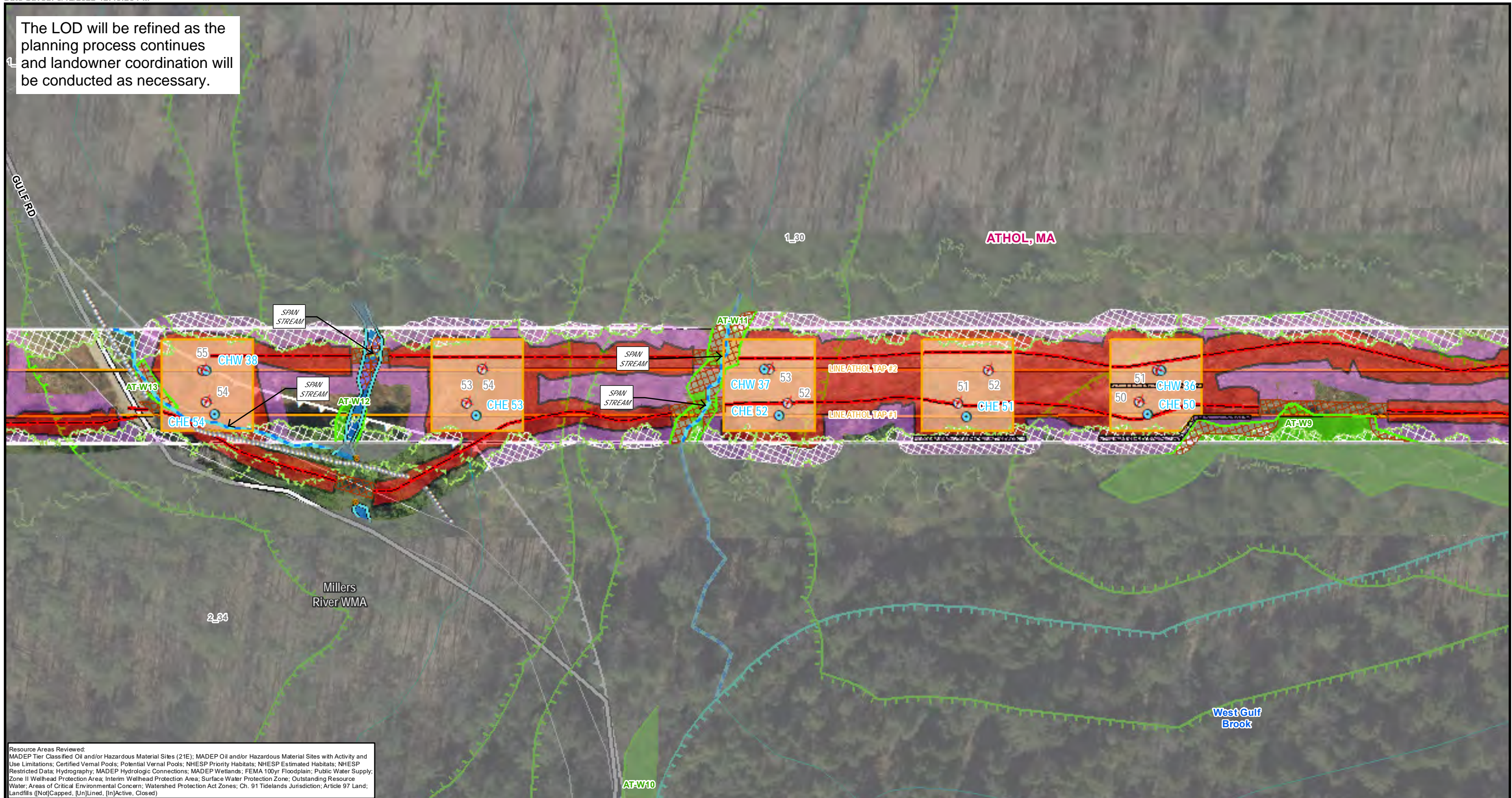
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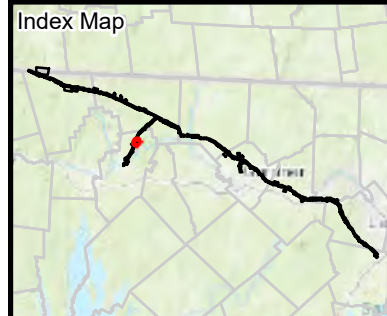
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A1/B2 ACR PROJECT

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50% Design

September 12, 2022

Athol, MA

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Index Map		Legend		Resource Areas		Construction Activities		Existing Conditions		Best Management Practices		Article 97 Lands		Environmental Justice 2020 Populations	

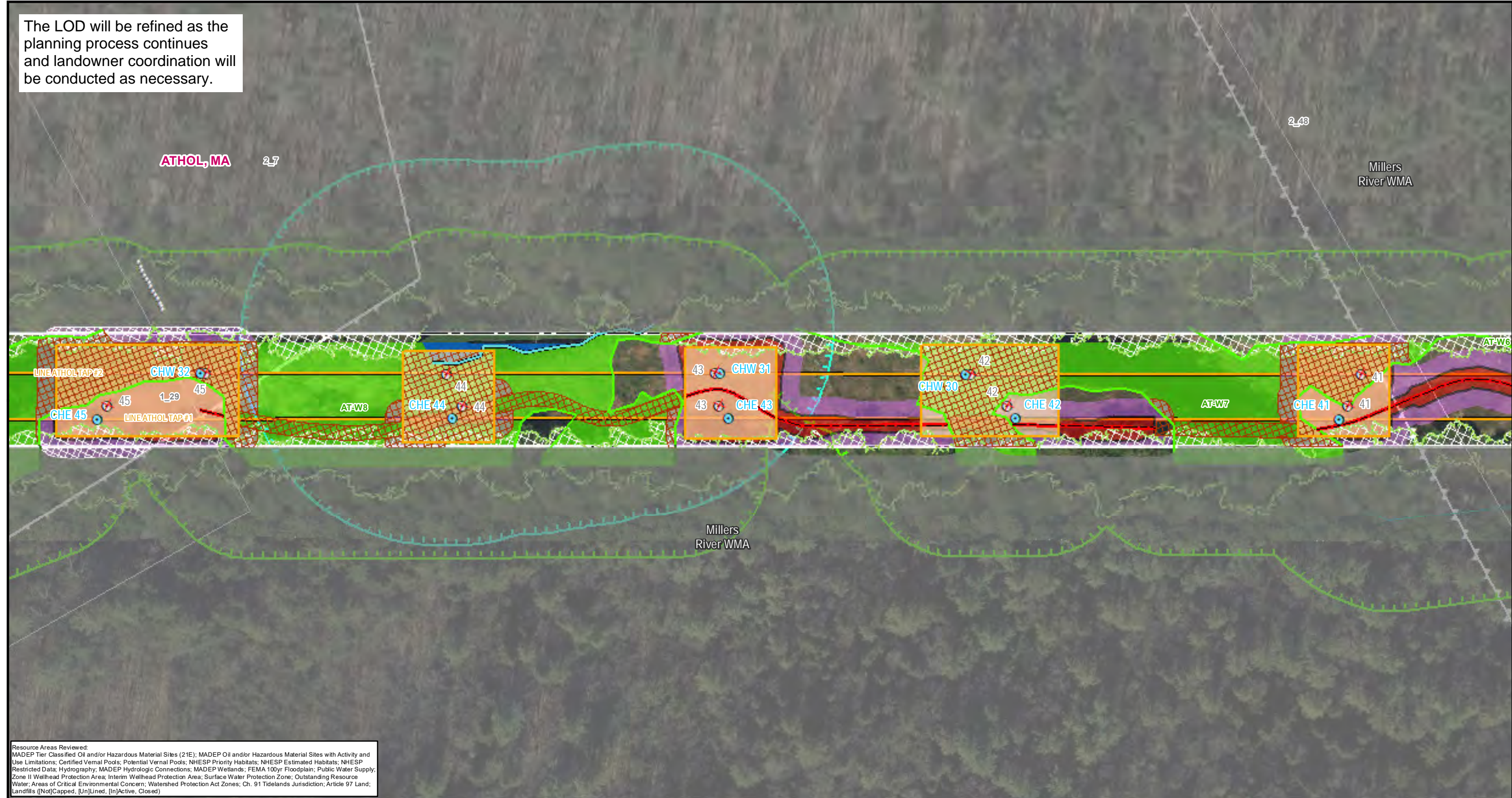
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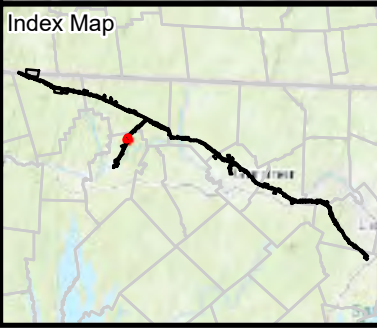
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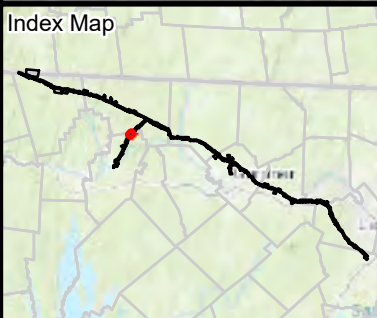
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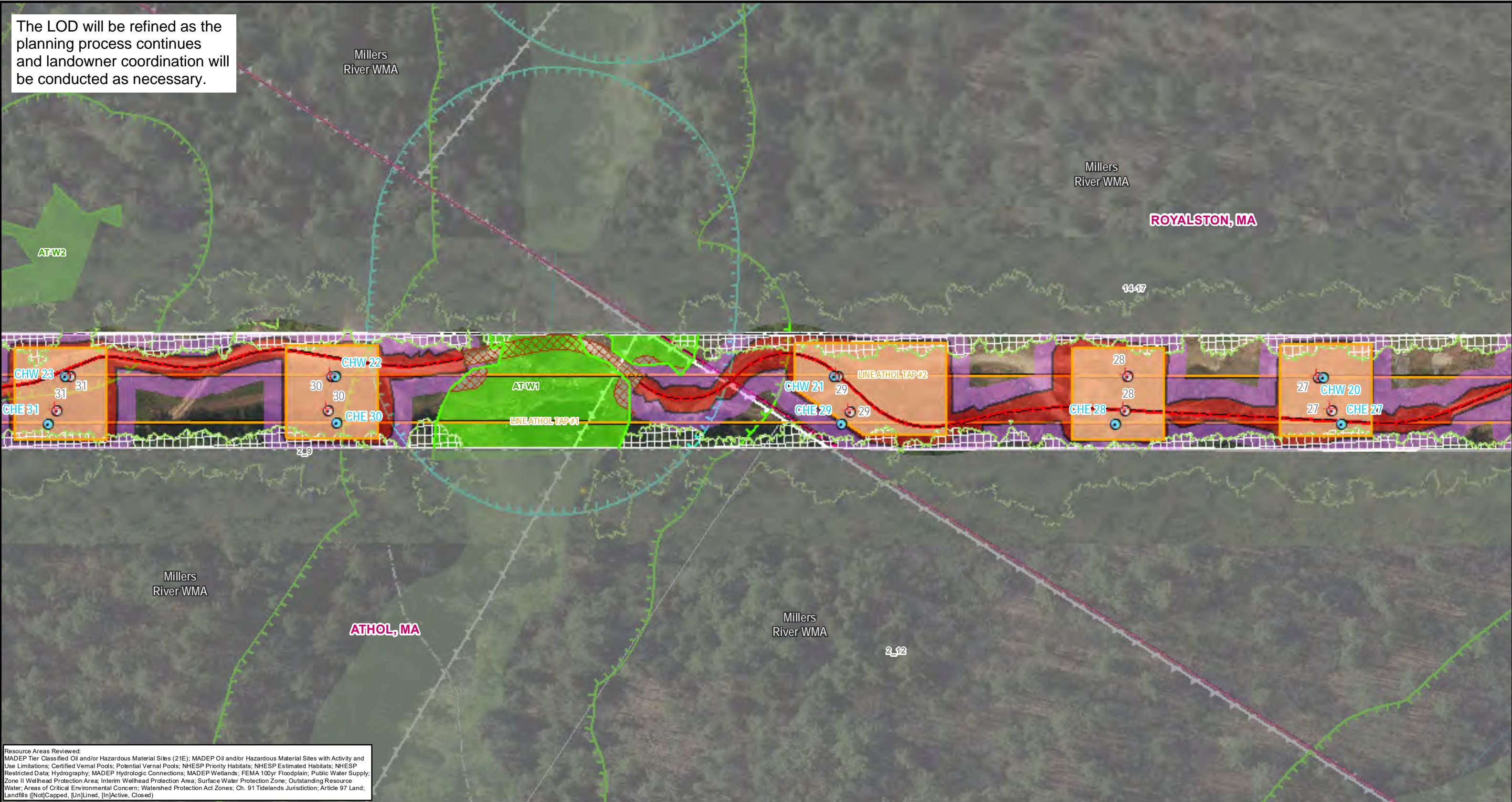
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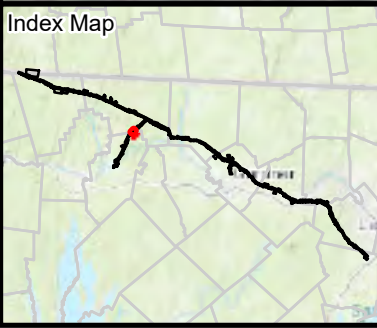
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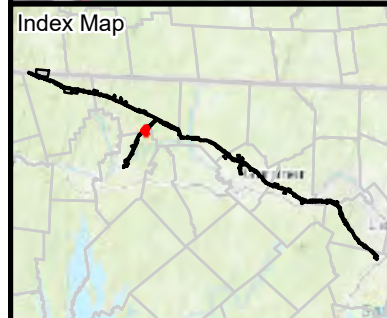
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<ul style="list-style-type: none"> Interim Wellhead Protection Area Zone II Wellhead Protection Area Surface Water Protection Zone Outstanding Resource Water Public Water Supply MADEP (21E) Site MADEP AUL Site Railroad DCR Trails Hiking Trails Long Distance Trails Parcel Boundary 	<ul style="list-style-type: none"> National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income
<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<p>1 inch = 100 feet</p> <p>0 50 100 Feet</p> <p>*Indicates Layers Set to Transparency</p>

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

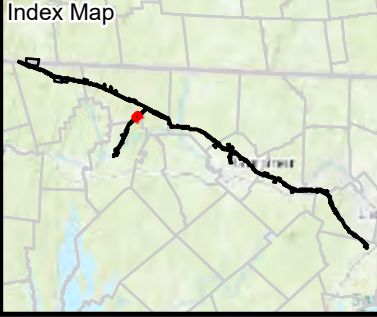
50% Design

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User

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Construction Activities		Resource Areas		Interim Wellhead Protection Area		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Interim Wellhead Protection Area	National Grid Property	DCR-State Parks & Recreation	Department of Fish & Game
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Zone II Wellhead Protection Area	Town Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	Limit of Cut/Fill	State Streams	Surface Water Protection Zone	State Boundary	Department of Fish & Game	Department of Fish & Game
Install Structure (Vertical Jumper Switch)	Limit of Disturbance	Delineated Wetland Edge	State Wetlands*	Outstanding Resource Water	Gate	Department of Fish & Game	Department of Fish & Game
In Kind Direct Embed Structure Replacement	Proposed Retaining Wall	Delineated Wetland	State Open Water*	Public Water Supply	Culvert	Department of Fish & Game	Department of Fish & Game
In Kind Structure on Concrete Caisson Replacement	Proposed Tree Removal	Delineated Vernal Pool Extent*	100ft Buffer to Wetlands & Streams	MADEP (21E) Site	Fence	Department of Fish & Game	Department of Fish & Game
Reuse Structure	Best Management Practices	Delineated Top of Bank	200ft Riverfront Area	MADEP AUL Site	Stonewall	Department of Fish & Game	Department of Fish & Game
General Maintenance	Construction Matting	Delineated Stream Centerline	FEMA 100yr Floodplain*	Railroad	Guardrail	Department of Fish & Game	Department of Fish & Game
Proposed Centerline	Existing Conditions	Delineated Ordinary High Water	Certified Vernal Pools	DCR Trails	Private	Department of Fish & Game	Department of Fish & Game
Remove OH Line	Existing Structure	Approximate Top of Bank	Potential Vernal Pools	Hiking Trails		Department of Fish & Game	Department of Fish & Game
Standard Road Type 1 & 2	Other Existing Transmission Centerline	Approximate Ordinary High Water	NHESP Priority & Estimated Habitats	Long Distance Trails		Department of Fish & Game	Department of Fish & Game
	Edge of ROW	Approximate Swale	NHESP Restricted Data	Parcel Boundary		Department of Fish & Game	Department of Fish & Game
		Delineated Open Water*				Department of Fish & Game	Department of Fish & Game

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

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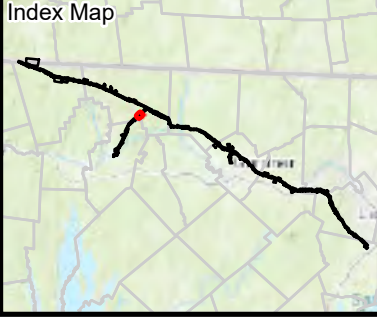
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
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<ul style="list-style-type: none"> Article 97 Lands DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private 	<p>1 inch = 100 feet</p> <p>0 50 100</p> <p>Feet</p> <p>*Indicates Layers Set to Transparency</p>

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

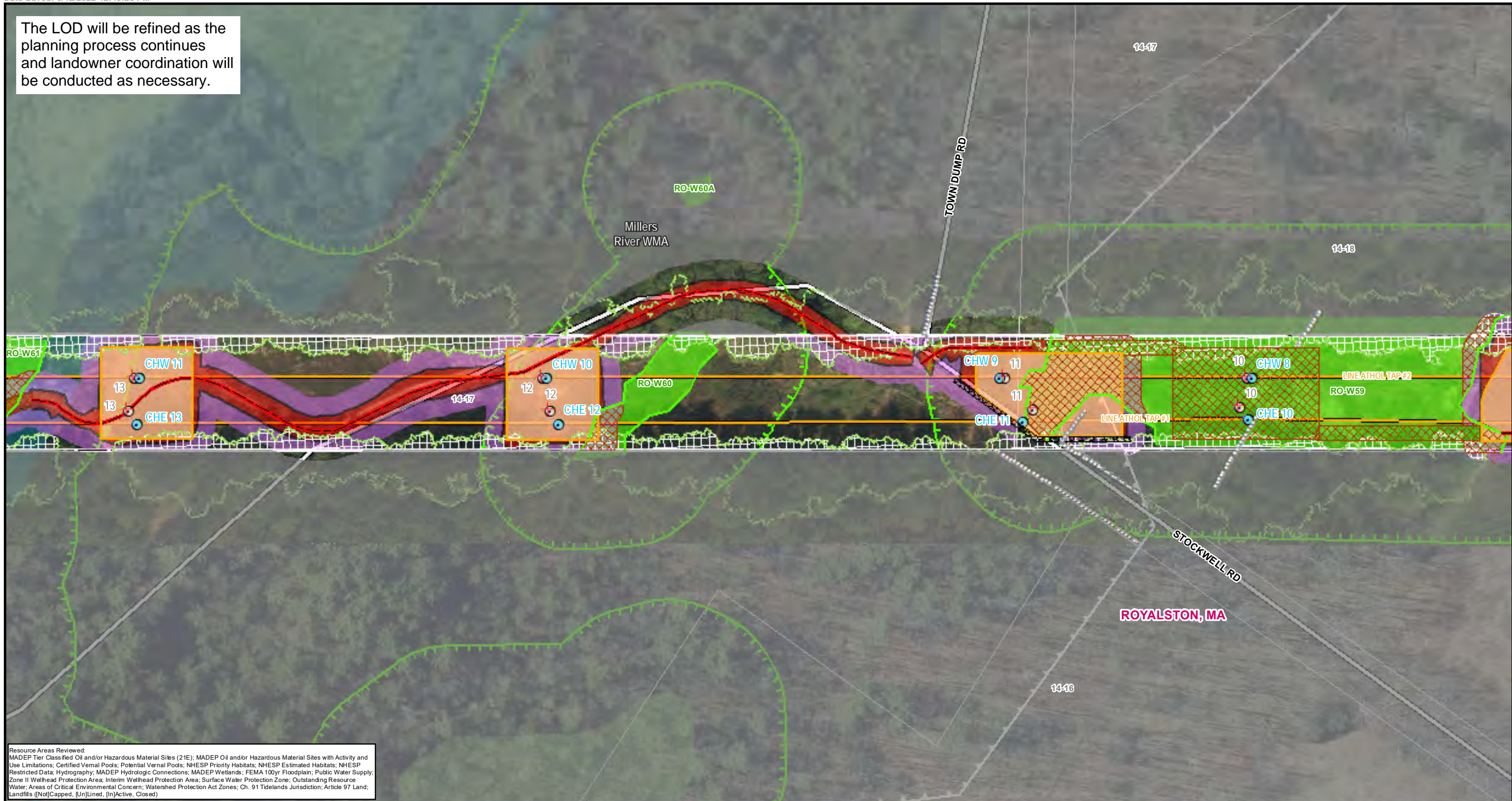
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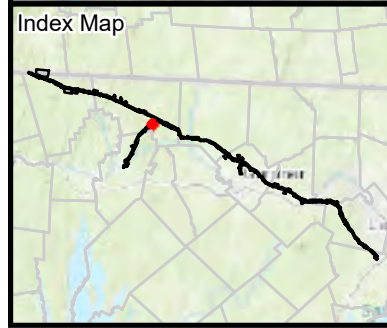
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Construction Activities		Resource Areas		Environmental Justice 2020 Populations	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Minority & Income	Minority & Income
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Minority	Minority
Install Structure (Direct Embed)	Pull Pad	Delineated Wetland Edge	State Streams	Income	Income
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland	State Wetlands*		
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Vernal Pool Extent*	State Open Water*		
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Stream Centerline	100ft Buffer to Wetlands & Streams		
Reuse Structure	Proposed Tree Removal	Delineated Ordinary High Water	200ft Riverfront Area		
General Maintenance	Best Management Practices	Approximate Top of Bank	FEMA 100yr Floodplain*		
Proposed Centerline	Construction Matting	Approximate Ordinary High Water	Certified Vernal Pools		
Remove OH Line	Existing Conditions	Approximate Swale	Potential Vernal Pools		
Standard Road Type 1 & 2	Existing Structure	Delineated Open Water*	NHESP Priority & Estimated Habitats		
	Other Existing Transmission Centerline		NHESP Restricted Data		
	Edge of ROW				

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Figure 2: MEPA General Purpose Plans

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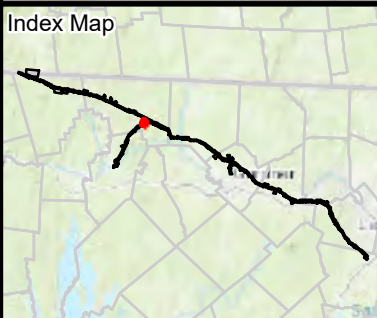
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Legend	
Construction Activities	Resource Areas
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water*
<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Conditions Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data
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Figure 2: MEPA General Purpose Plans

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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1 inch = 100 feet

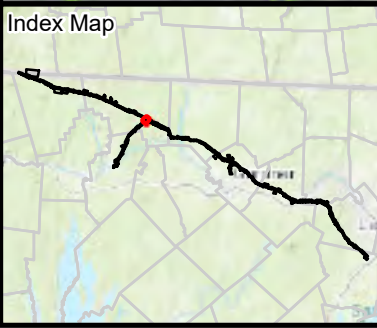
Feet

**Indicates Layers Set to Transparency*

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Construction Activities	Resource Areas	Existing Conditions	Article 97 Lands
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* 	<ul style="list-style-type: none"> Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Structure Other Existing Transmission Centerline Edge of ROW Approximate Wetland Edge Approximate Wetland State Streams State Wetlands* State Open Water* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Certified Vernal Pools Potential Vernal Pools NHESP Priority & Estimated Habitats NHESP Restricted Data 	<ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income

Legend

Construction Activities

Resource Areas

Existing Conditions

Article 97 Lands

1 inch = 100 feet

0 50 100 Feet

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A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans

50% Design

September 12, 2022

Royalston, MA

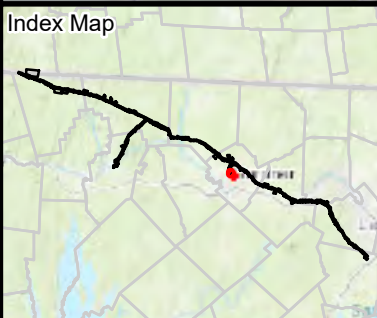
Page 164 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Construction Activities		Resource Areas		Existing Conditions		Article 97 Lands	
Remove Structure	Designed Road Type 3-5	Existing Access	Approximate Wetland Edge	Proposed Centerline	Existing Structure	National Grid Property	DCR-State Parks & Recreation
Install Structure (Concrete Caisson)	Work Envelope	Existing Tree Line	Approximate Wetland	Remove OH Line	Other Existing Transmission Centerline	Town Boundary	Department of Fish & Game
Install Structure (Direct Embed)	Pull Pad	State Streams	State Wetlands*	Standard Road Type 1 & 2	Edge of ROW	State Boundary	Land Trust
Install Structure (Vertical Jumper Switch)	Limit of Cut/Fill	Delineated Wetland Edge	State Open Water*			Gate	Municipal
In Kind Direct Embed Structure Replacement	Limit of Disturbance	Delineated Wetland	100ft Buffer to Wetlands & Streams			Culvert	Private
In Kind Structure on Concrete Caisson Replacement	Proposed Retaining Wall	Delineated Vernal Pool Extent*	200ft Riverfront Area			Fence	
Reuse Structure	Proposed Tree Removal	Delineated Top of Bank	FEMA 100yr Floodplain*			Stonewall	
General Maintenance	Best Management Practices	Delineated Stream Centerline	Certified Vernal Pools			Guardrail	
	Construction Matting	Delineated Ordinary High Water	Potential Vernal Pools				
	Existing Conditions	Approximate Top of Bank	NHESP Priority & Estimated Habitats				
		Approximate Ordinary High Water	NHESP Restricted Data				
		Approximate Swale					
		Delineated Open Water*					

A1/B2 ACR PROJECT

Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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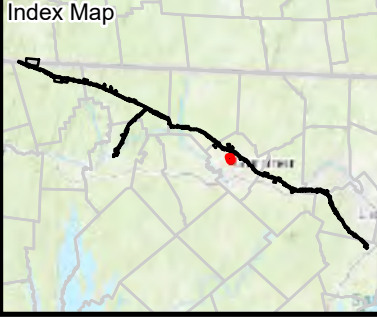
nationalgrid
BSC GROUP

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 0 50 100
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Legend

<p>Construction Activities</p> <ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<p>Designed Road Type 3-5</p> <p>Work Envelope</p> <p>Pull Pad <p>Limit of Cut/Fill <p>Limit of Disturbance</p> <p>Proposed Retaining Wall</p> <p>Proposed Tree Removal</p> <p>Best Management Practices</p> <p>Construction Matting</p> <p>Existing Conditions</p> <p>Existing Structure</p> <p>Other Existing Transmission Centerline</p> <p>Edge of ROW</p> </p></p>	<p>Existing Access</p> <p>Existing Tree Line</p> <p>Delineated Wetland Edge</p> <p>Delineated Wetland</p> <p>Delineated Vernal Pool Extent*</p> <p>Delineated Top of Bank</p> <p>Delineated Stream Centerline</p> <p>Delineated Ordinary High Water</p> <p>Approximate Top of Bank</p> <p>Approximate Ordinary High Water</p> <p>Approximate Swale</p> <p>Delineated Open Water*</p>	<p>Approximate Wetland Edge</p> <p>Approximate Wetland</p> <p>State Streams</p> <p>State Wetlands*</p> <p>State Open Water*</p> <p>100ft Buffer to Wetlands & Streams</p> <p>200ft Riverfront Area</p> <p>FEMA 100yr Floodplain*</p> <p>Certified Vernal Pools</p> <p>Potential Vernal Pools</p> <p>NHESP Priority & Estimated Habitats</p> <p>NHESP Restricted Data</p>	<p>Interim Wellhead Protection Area</p> <p>Zone II Wellhead Protection Area</p> <p>Surface Water Protection Zone</p> <p>Outstanding Resource Water</p> <p>Public Water Supply</p> <p>MADEP (21E) Site</p> <p>MADEP AUL Site</p> <p>Railroad</p> <p>DCR Trails</p> <p>Hiking Trails</p> <p>Long Distance Trails</p> <p>Parcel Boundary</p>	<p>National Grid Property</p> <p>Town Boundary</p> <p>State Boundary</p> <p>Gate</p> <p>Culvert</p> <p>Fence</p> <p>Stonewall</p> <p>Guardrail</p> <p>Environmental Justice 2020 Populations</p> <p>Minority & Income</p> <p>Minority</p> <p>Income</p>	<p>Article 97 Lands</p> <p>DCR-State Parks & Recreation</p> <p>Department of Fish & Game</p> <p>Land Trust</p> <p>Municipal</p> <p>Private</p>
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A1/B2 ACR PROJECT

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Gardner, MA

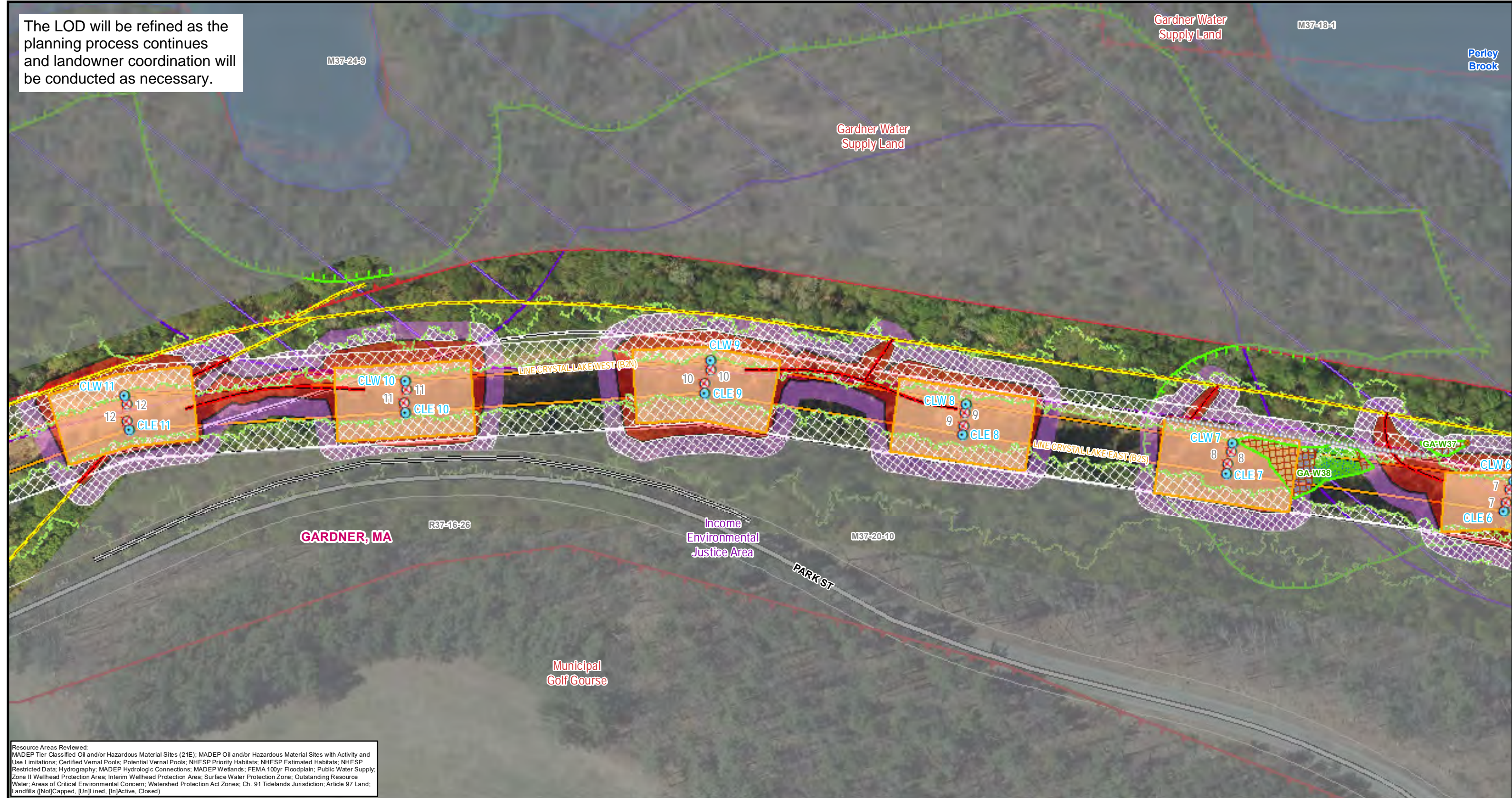
Page 166 of 168

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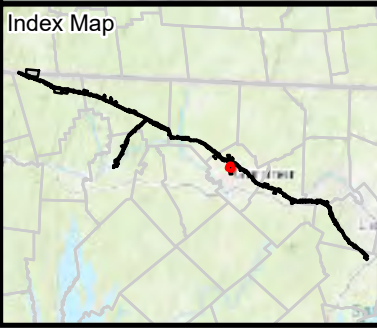
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A1/B2 ACR PROJECT

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 50% Design
 September 12, 2022

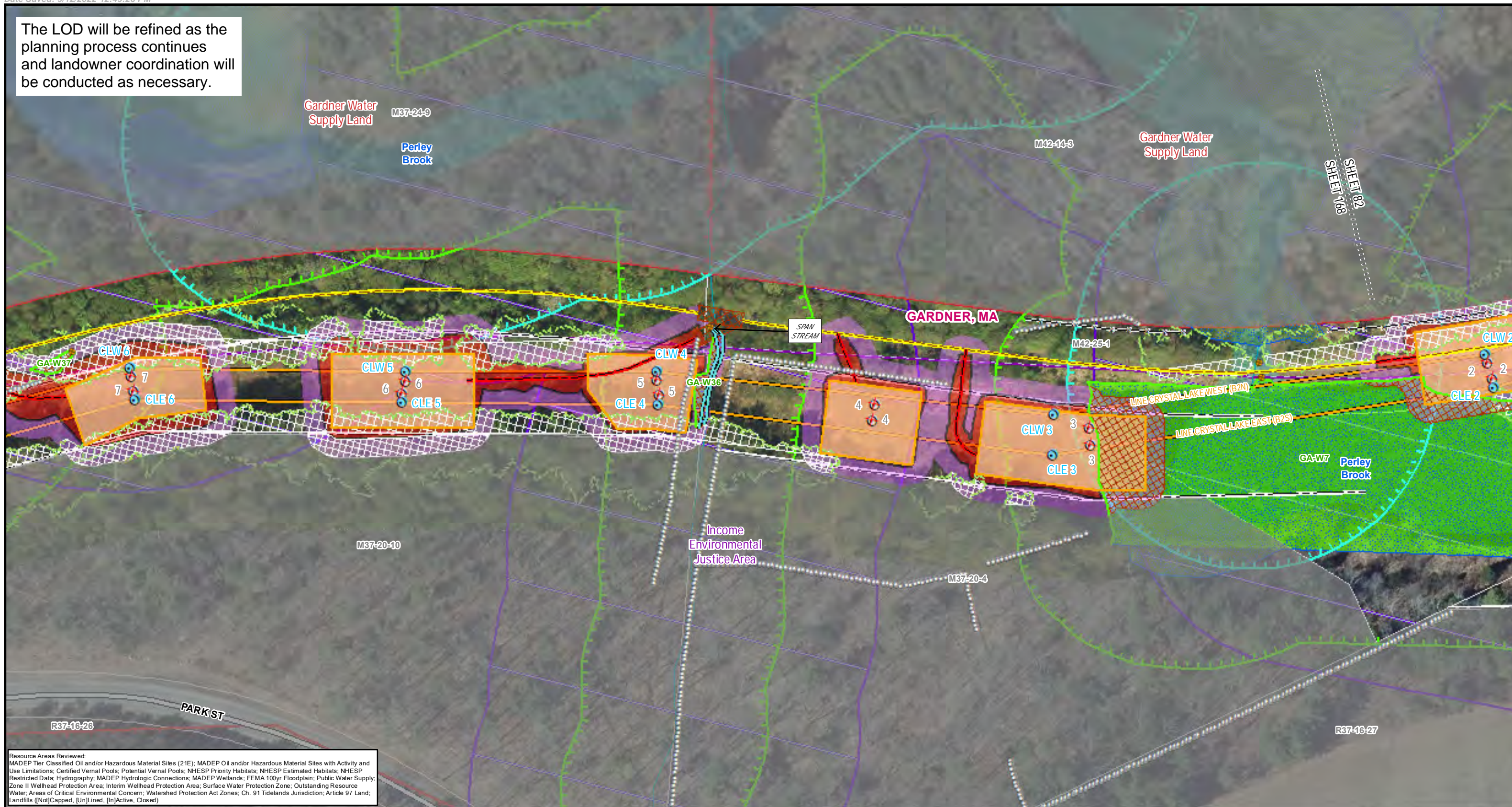
Gardner, MA
 Page 167 of 168

1 inch = 100 feet
 0 50 100
 Feet

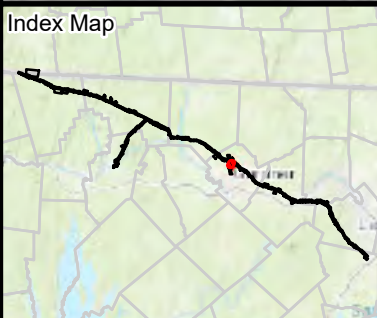
**Indicates Layers Set to Transparency*

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User

The LOD will be refined as the planning process continues and landowner coordination will be conducted as necessary.



Resource Areas Reviewed:
 MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)



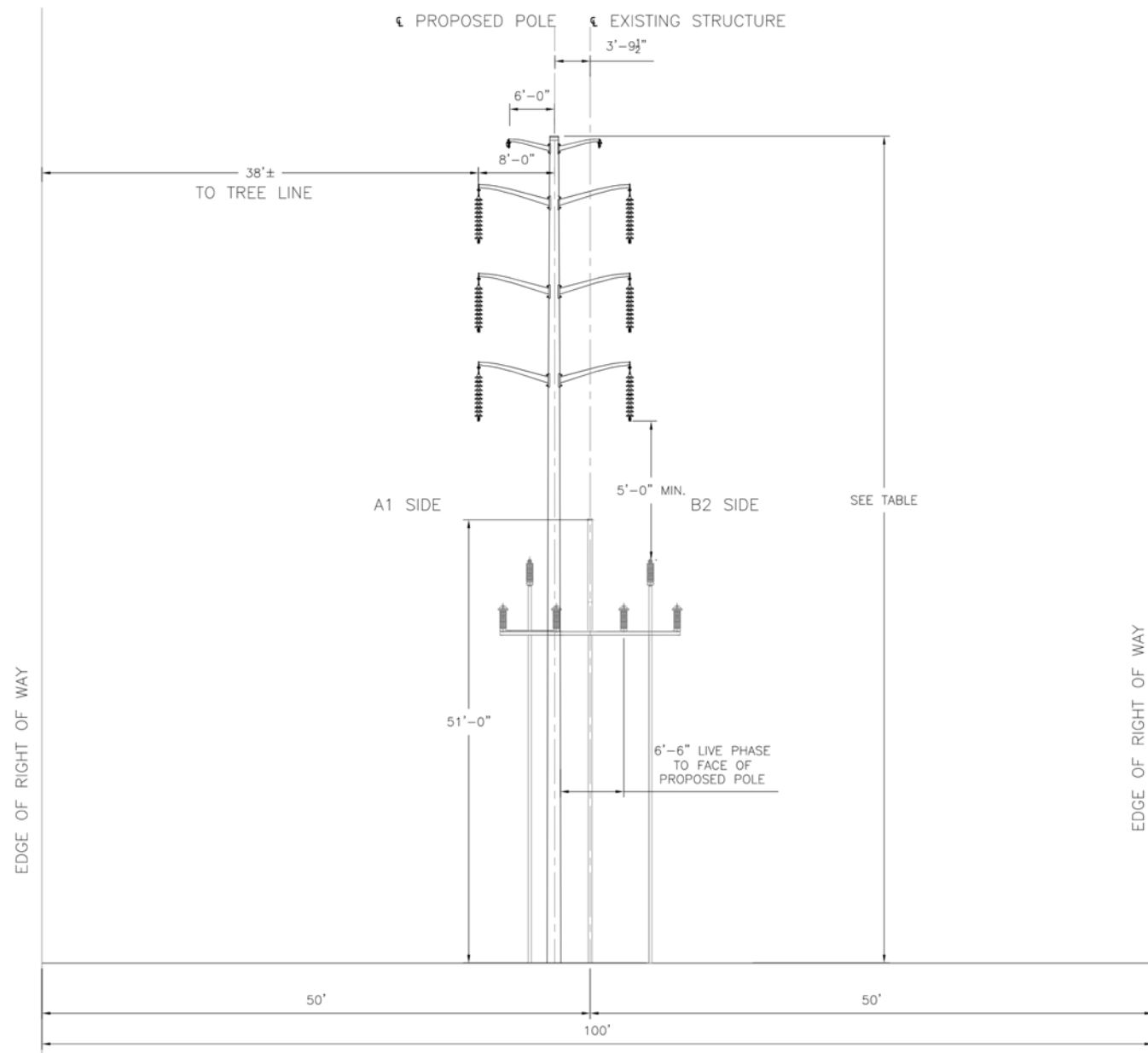
Construction Activities	Resource Areas	Existing Conditions	Article 97 Lands
<ul style="list-style-type: none"> Remove Structure Install Structure (Concrete Caisson) Install Structure (Direct Embed) Install Structure (Vertical Jumper Switch) In Kind Direct Embed Structure Replacement In Kind Structure on Concrete Caisson Replacement Reuse Structure General Maintenance Proposed Centerline Remove OH Line Standard Road Type 1 & 2 	<ul style="list-style-type: none"> Designed Road Type 3-5 Work Envelope Pull Pad Limit of Cut/Fill Limit of Disturbance Proposed Retaining Wall Proposed Tree Removal Best Management Practices Construction Matting Existing Structure Other Existing Transmission Centerline Edge of ROW 	<ul style="list-style-type: none"> Existing Access Existing Tree Line Delineated Wetland Edge Delineated Wetland Delineated Vernal Pool Extent* Delineated Top of Bank Delineated Stream Centerline Delineated Ordinary High Water Approximate Top of Bank Approximate Ordinary High Water Approximate Swale Delineated Open Water* 	<ul style="list-style-type: none"> DCR-State Parks & Recreation Department of Fish & Game Land Trust Municipal Private National Grid Property Town Boundary State Boundary Gate Culvert Fence Stonewall Guardrail Environmental Justice 2020 Populations Minority & Income Minority Income

A1/B2 ACR PROJECT

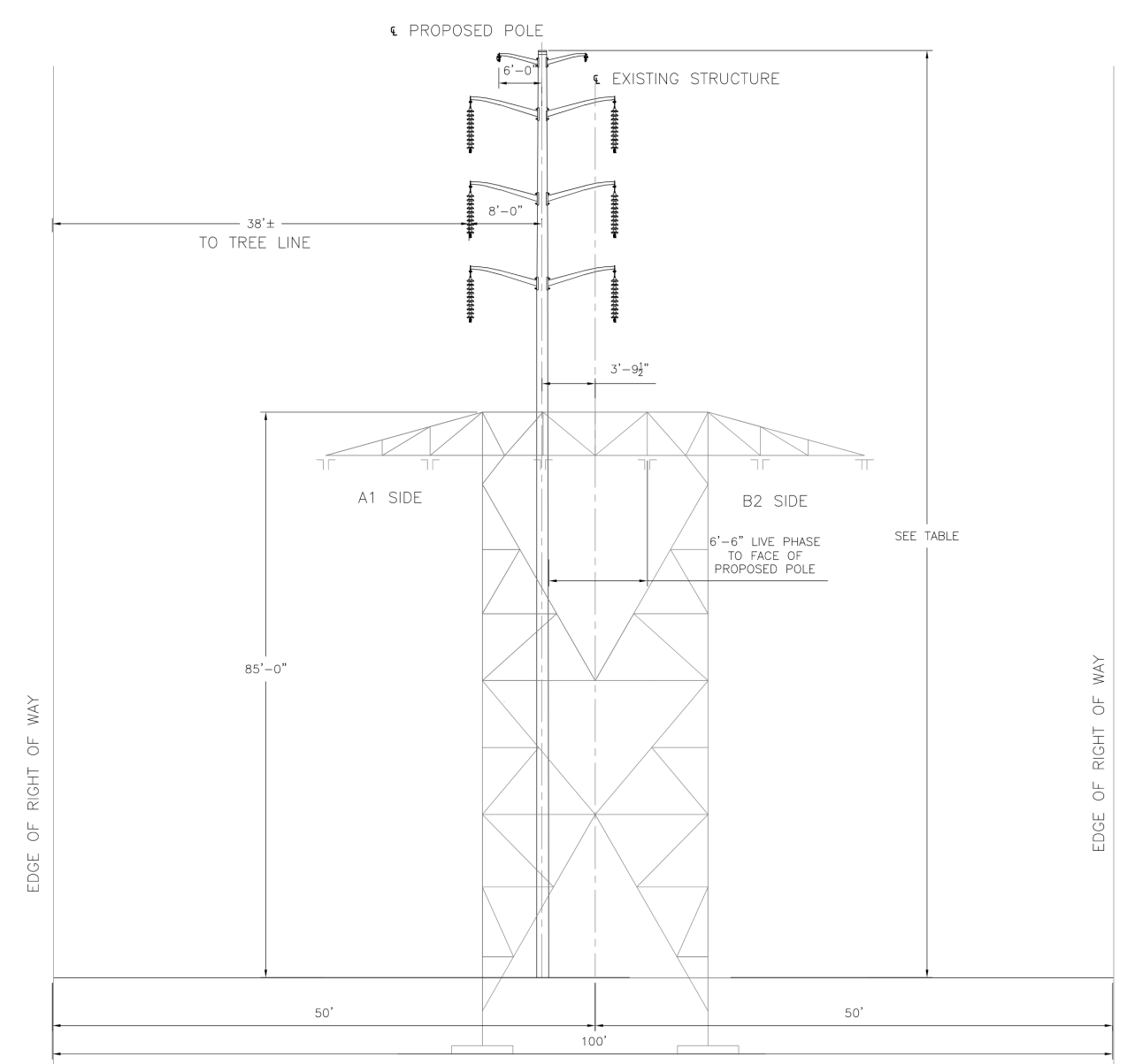
Figure 2: MEPA General Purpose Plans
 50% Design
 September 12, 2022

Gardner, MA
 Page 168 of 168

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User



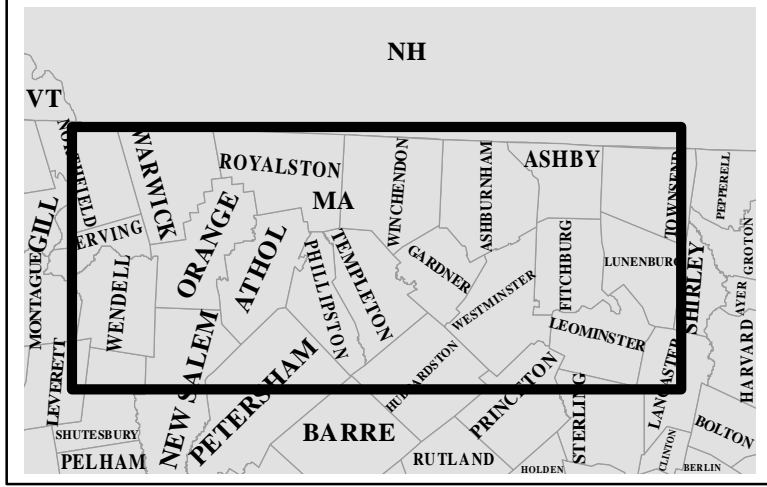
**PROPOSED TYPICAL DOUBLE CIRCUIT STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION**



**PROPOSED DOUBLE CIRCUIT STRUCTURES
STRUCTURE 234-1 - 237-1
LOOKING TOWARDS PRATTS JUNCTION**

Project Vicinity

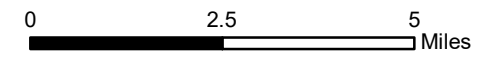
Legend



A1/B2 ACR Project

**Figure 3
Typical Structure Details - A1/B2**

State of Massachusetts
Franklin & Worcester County:
Towns of Athol, Royalston, Sterling, Warwick, Westminister, & Winchendon.
Cities of Fitchburg, Gardner, & Leominster

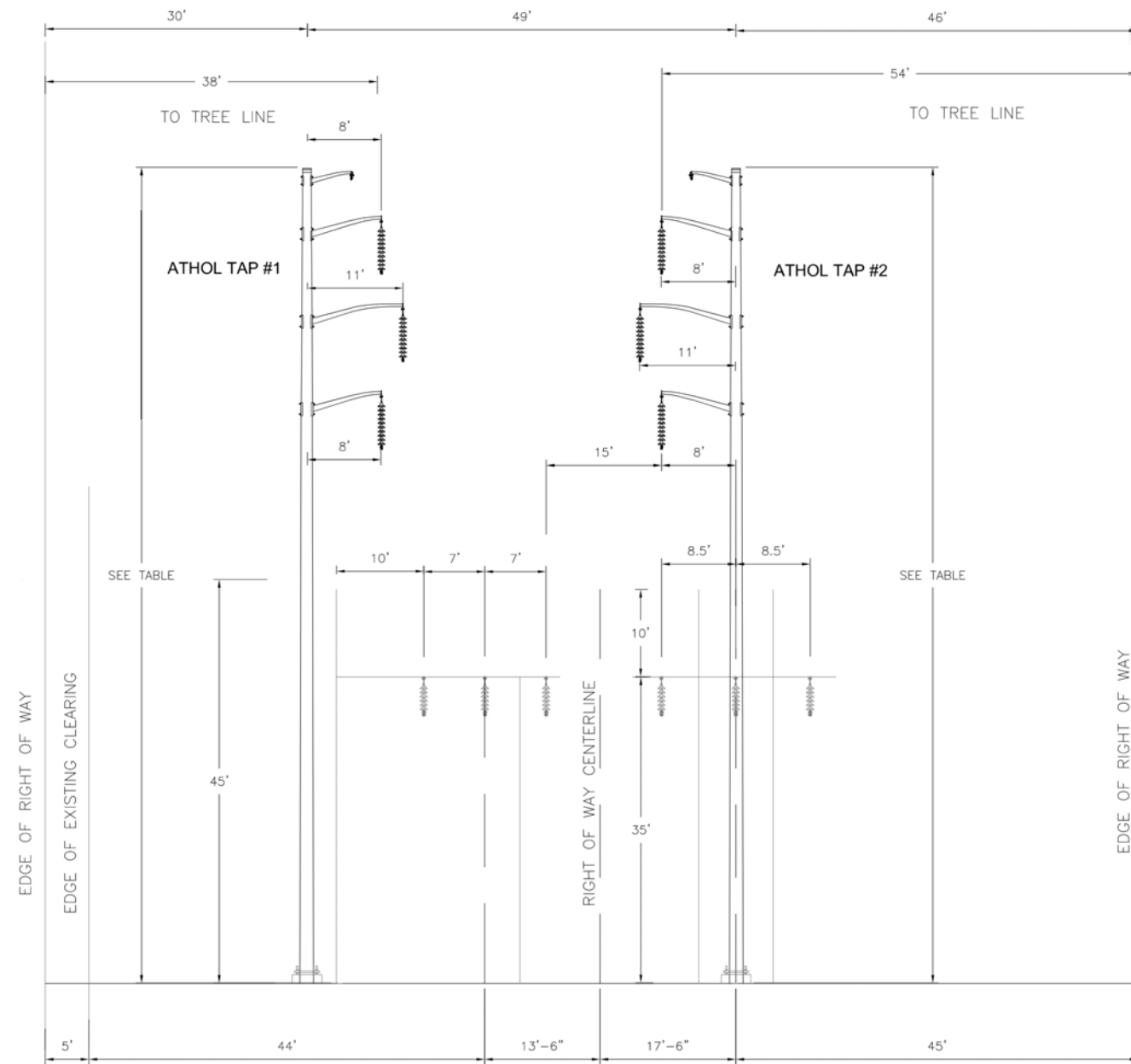


**NOT FOR
CONSTRUCTION**

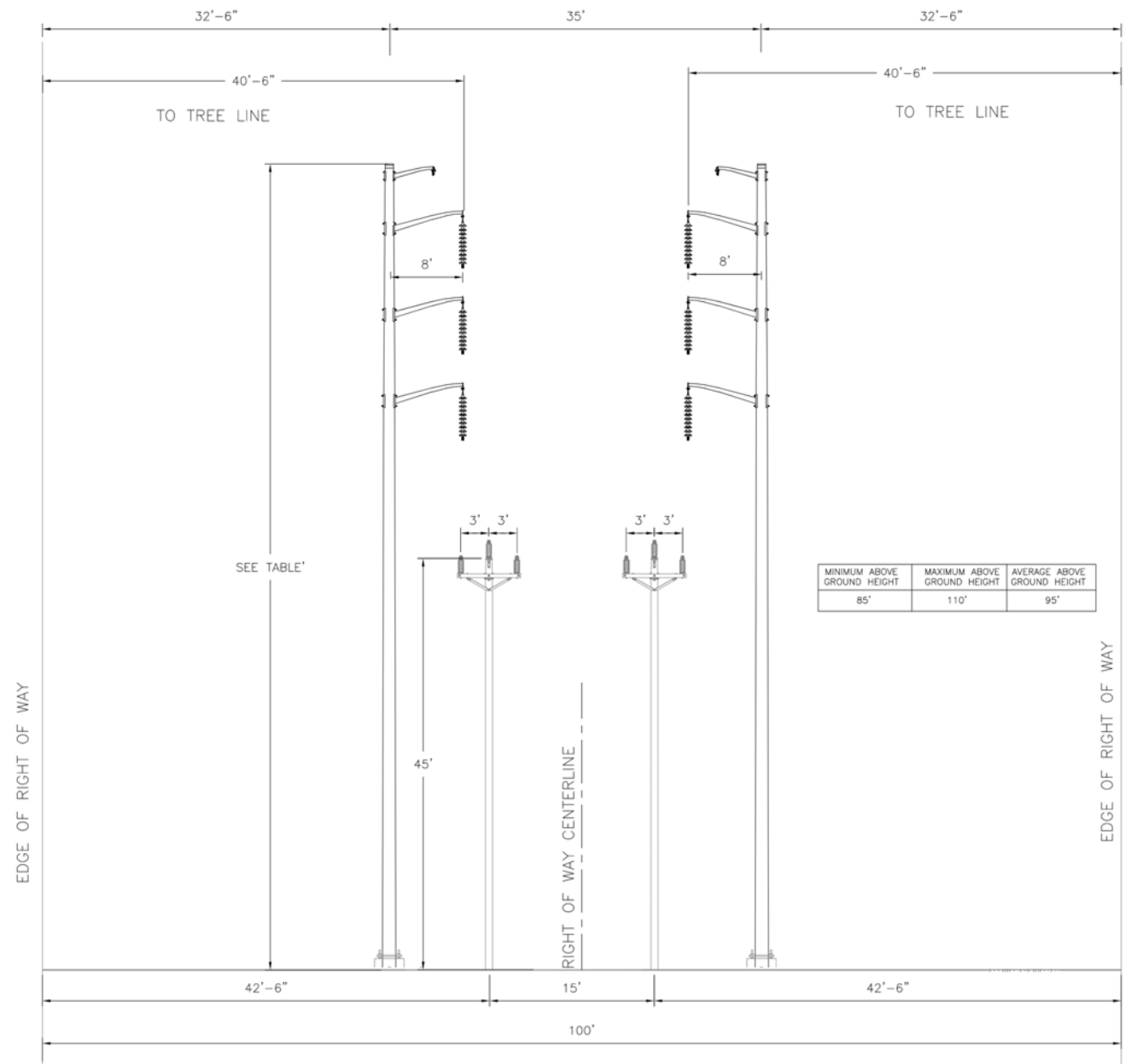
DATE: 7/5/2022

1" = 13,200'

AUTHOR: KANDREWS



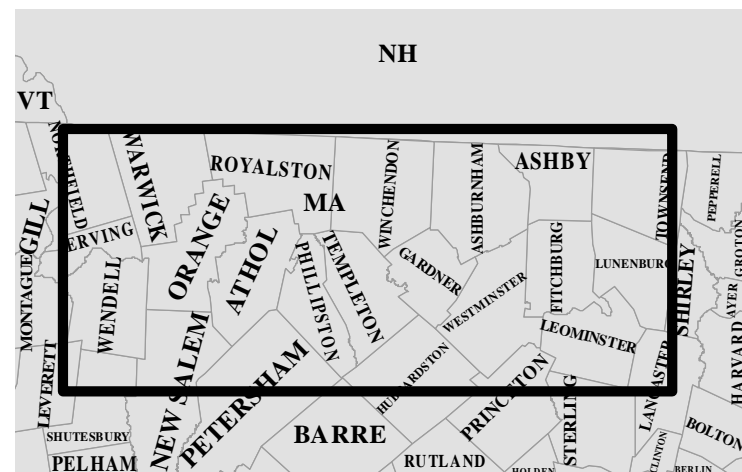
PROPOSED SINGLE CIRCUIT VERTICAL DAVIT ARM STRUCTURES
LOOKING TOWARDS ATHOL STATION



PROPOSED SINGLE CIRCUIT VERTICAL DAVIT ARM STRUCTURES
LOOKING TOWARDS CRYSTAL LAKE STATION

Project Vicinity

Legend



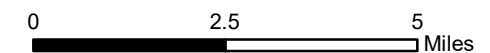
A1/B2 ACR Project

Figure 3 Typical Structure Details - A1/B2

State of Massachusetts
Franklin & Worcester County:
Towns of Athol, Royalston, Sterling, Warwick, Westminister, & Winchendon.
Cities of Fitchburg, Gardner, & Leominster



NAD 1983 2011 StatePlane Rhode Island FIPS 3800 Ft US

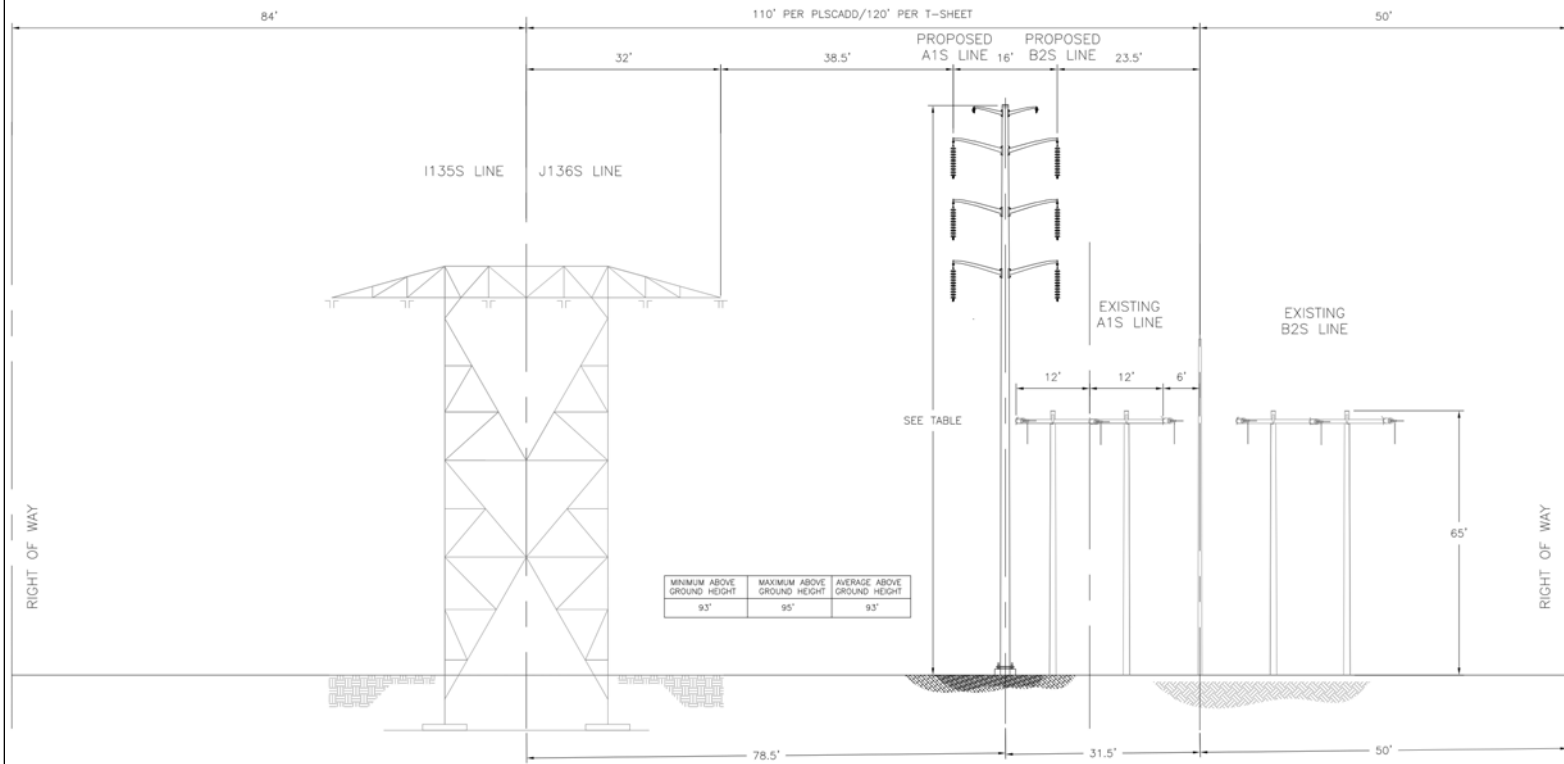


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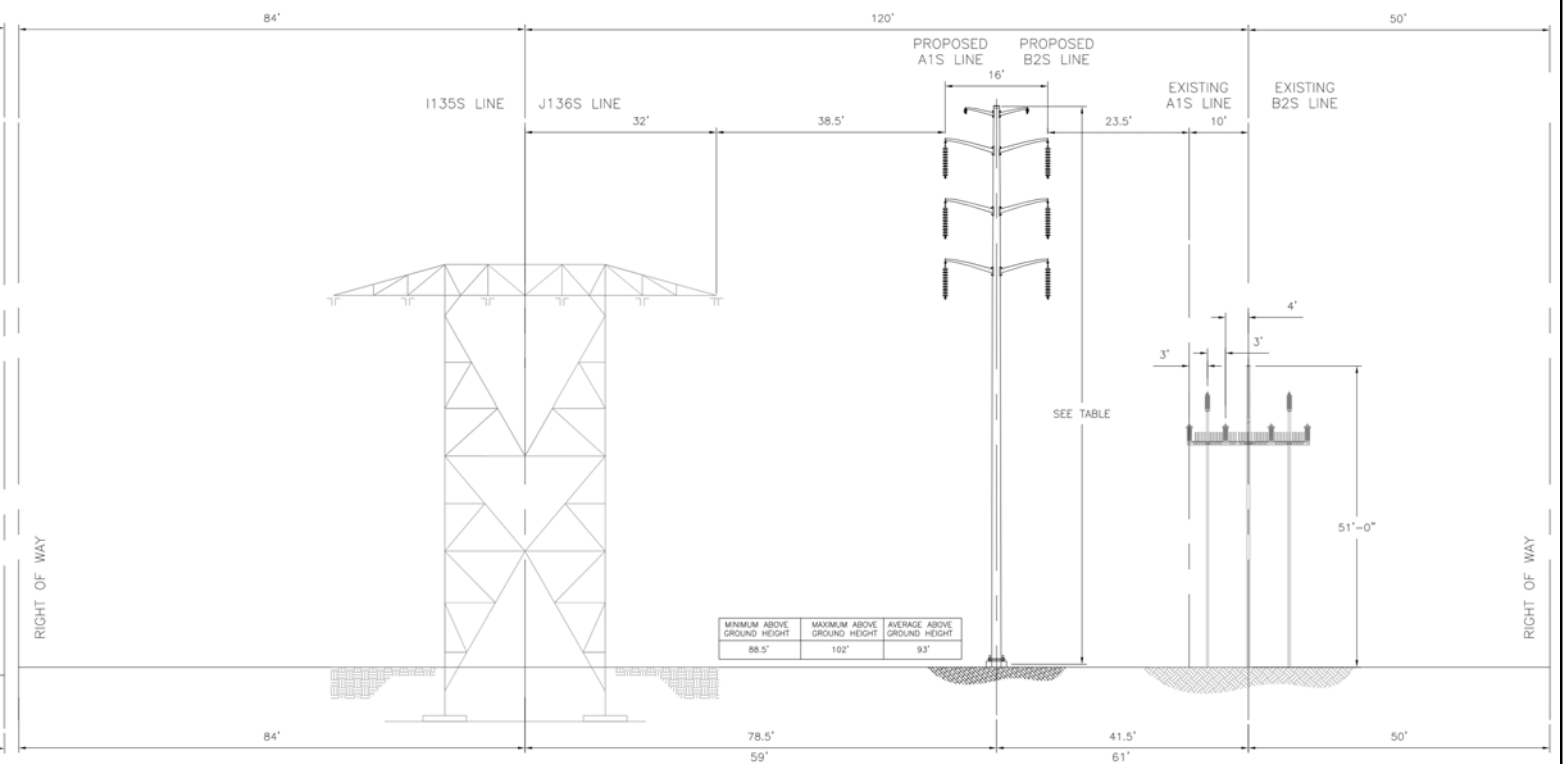
DATE: 7/5/2022

1" = 13,200'

AUTHOR: KANDREWS



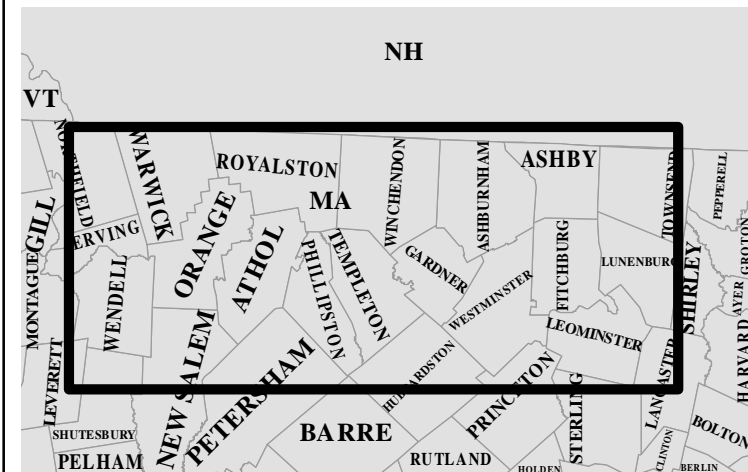
**CROSS-SECTION FACING PRATTS JUNCTION SUBSTATION
STRUCTURE 564 - 565 (SECTION)**



**CROSS-SECTION FACING PRATTS JUNCTION SUBSTATION
STRUCTURE 566 - 574, 576 - 580, AND 582 - 641 (SECTIONS)**

Project Vicinity

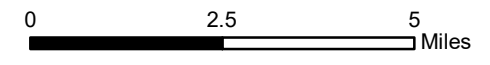
Legend



A1/B2 ACR Project

**Figure 3
Typical Structure Details - A1/B2**

State of Massachusetts
Franklin & Worcester County:
Towns of Athol, Royalston, Sterling, Warwick, Westminister, & Winchendon.
Cities of Fitchburg, Gardner, & Leominster

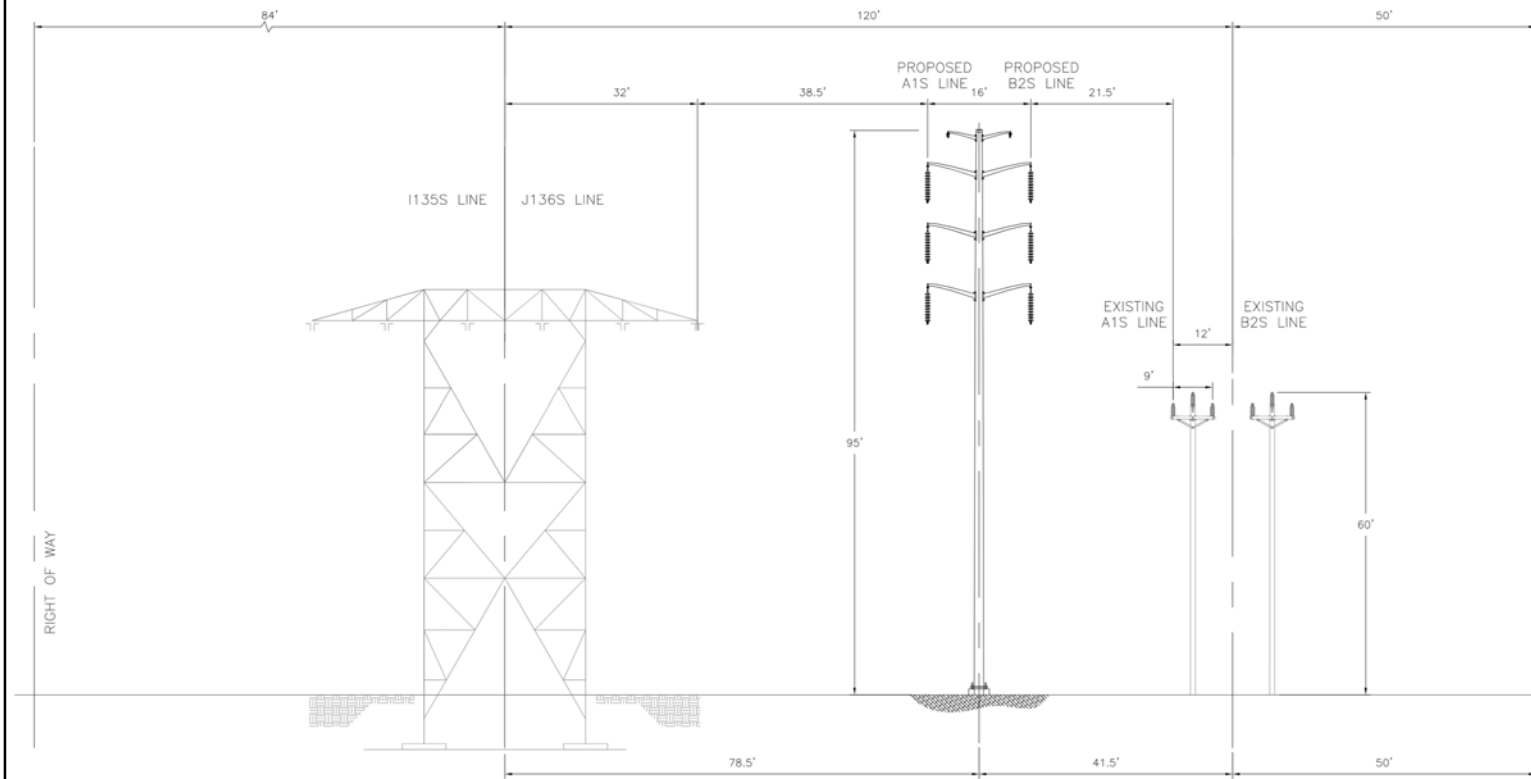


**NOT FOR
CONSTRUCTION**

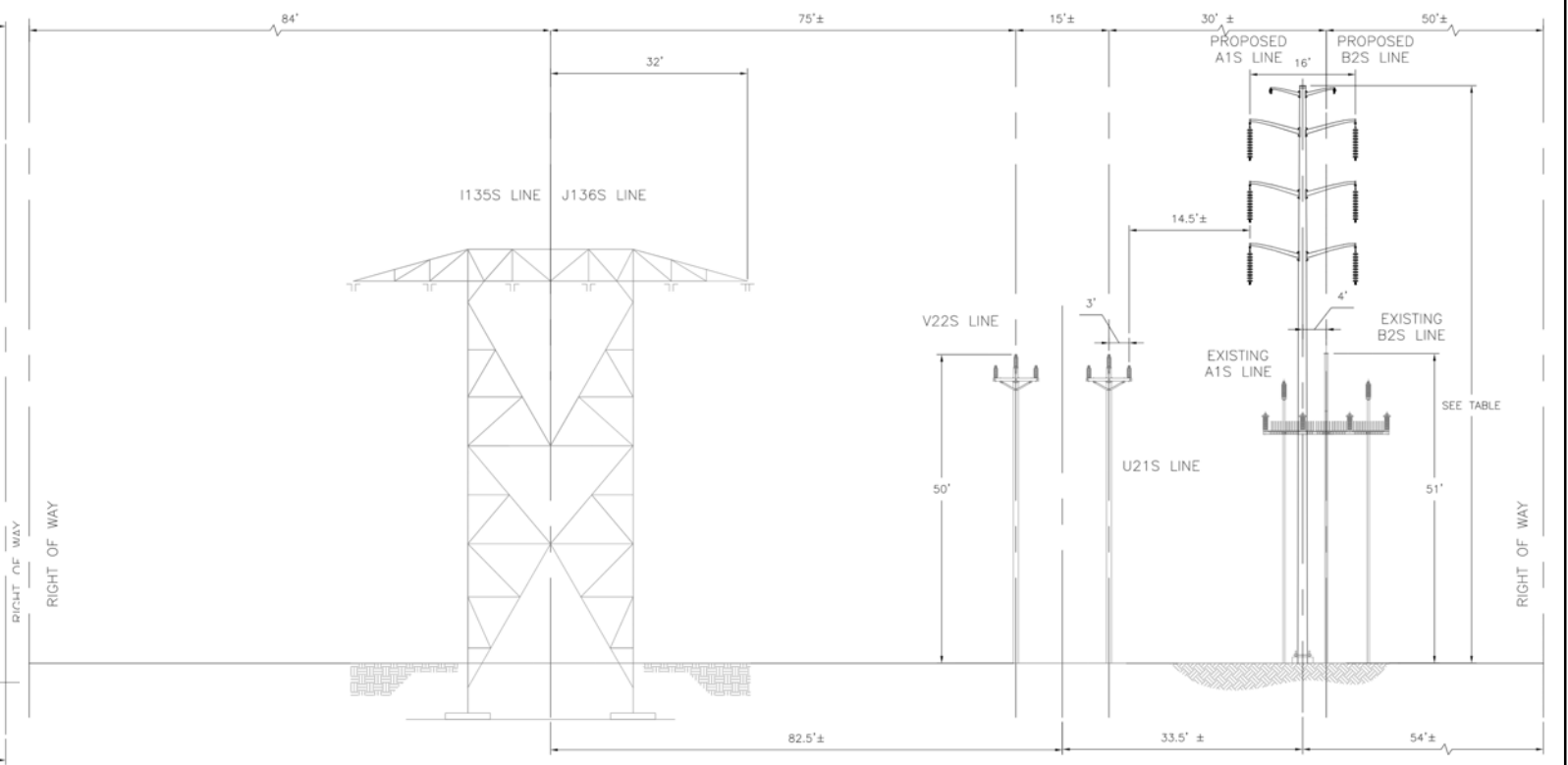
DATE: 7/5/2022

1" = 13,200'

AUTHOR: KANDREWS



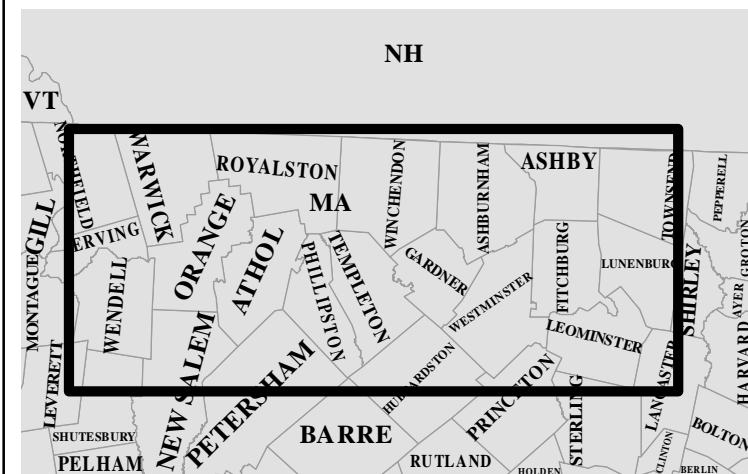
CROSS-SECTION FACING PRATTS JUNCTION SUBSTATION
STRUCTURE 575 (DADE)



CROSS-SECTION FACING PRATTS JUNCTION SUBSTATION
STRUCTURE 642 - 647 (SECTION)

Project Vicinity

Legend



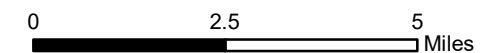
A1/B2 ACR Project

Figure 3
Typical Structure Details - A1/B2

State of Massachusetts
Franklin & Worcester County:
Towns of Athol, Royalston, Sterling, Warwick, Westminister, & Winchendon.
Cities of Fitchburg, Gardner, & Leominster



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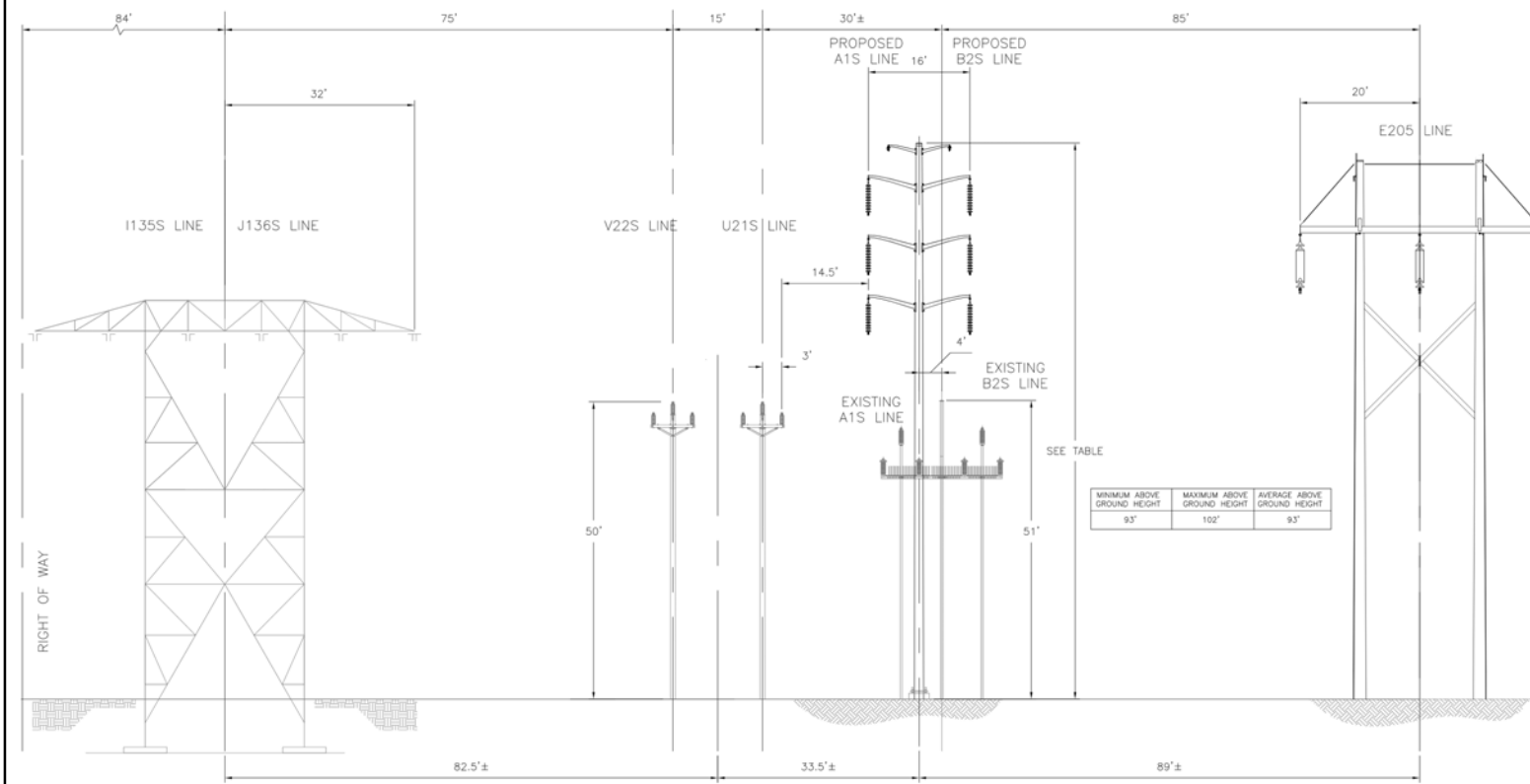


1" = 13,200'

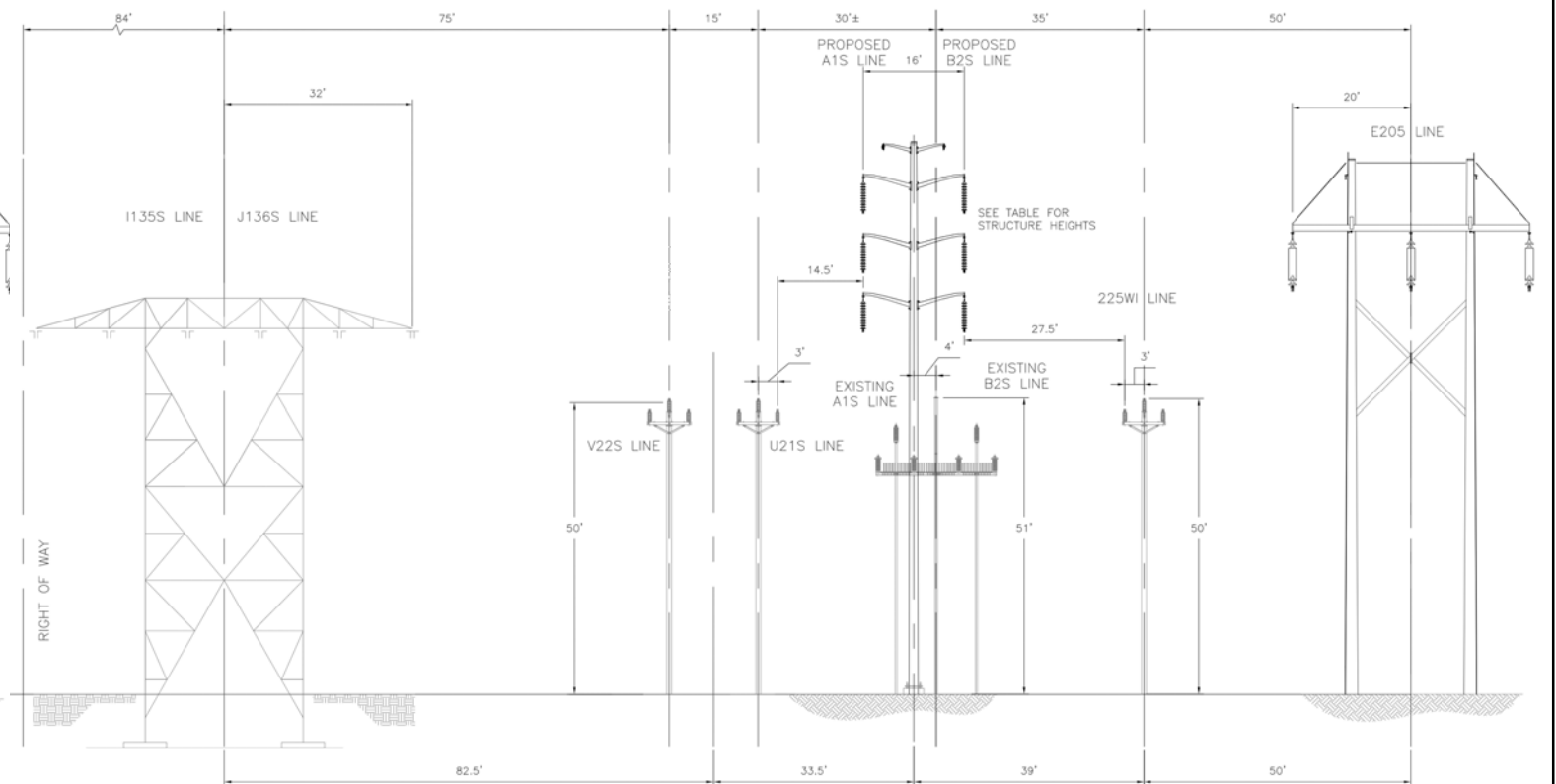
NOT FOR
CONSTRUCTION

DATE: 7/5/2022

AUTHOR: KANDREWS



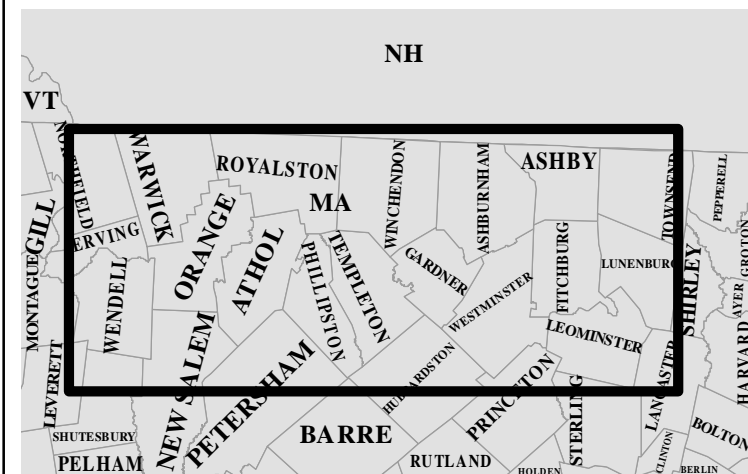
CROSS-SECTION FACING PRATTS JUNCTION SUBSTATION
STRUCTURE 648 - 653 (SECTION)



CROSS-SECTION FACING PRATTS JUNCTION SUBSTATION
STRUCTURE 654 - 661 (SECTION)

Project Vicinity

Legend



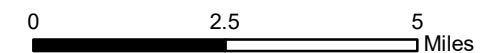
A1/B2 ACR Project

Figure 3 Typical Structure Details - A1/B2

State of Massachusetts
Franklin & Worcester County:
Towns of Athol, Royalston, Sterling, Warwick, Westminister, & Winchendon.
Cities of Fitchburg, Gardner, & Leominster



NAD 1983 2011 StatePlane Rhode Island FIPS 3800 Ft US

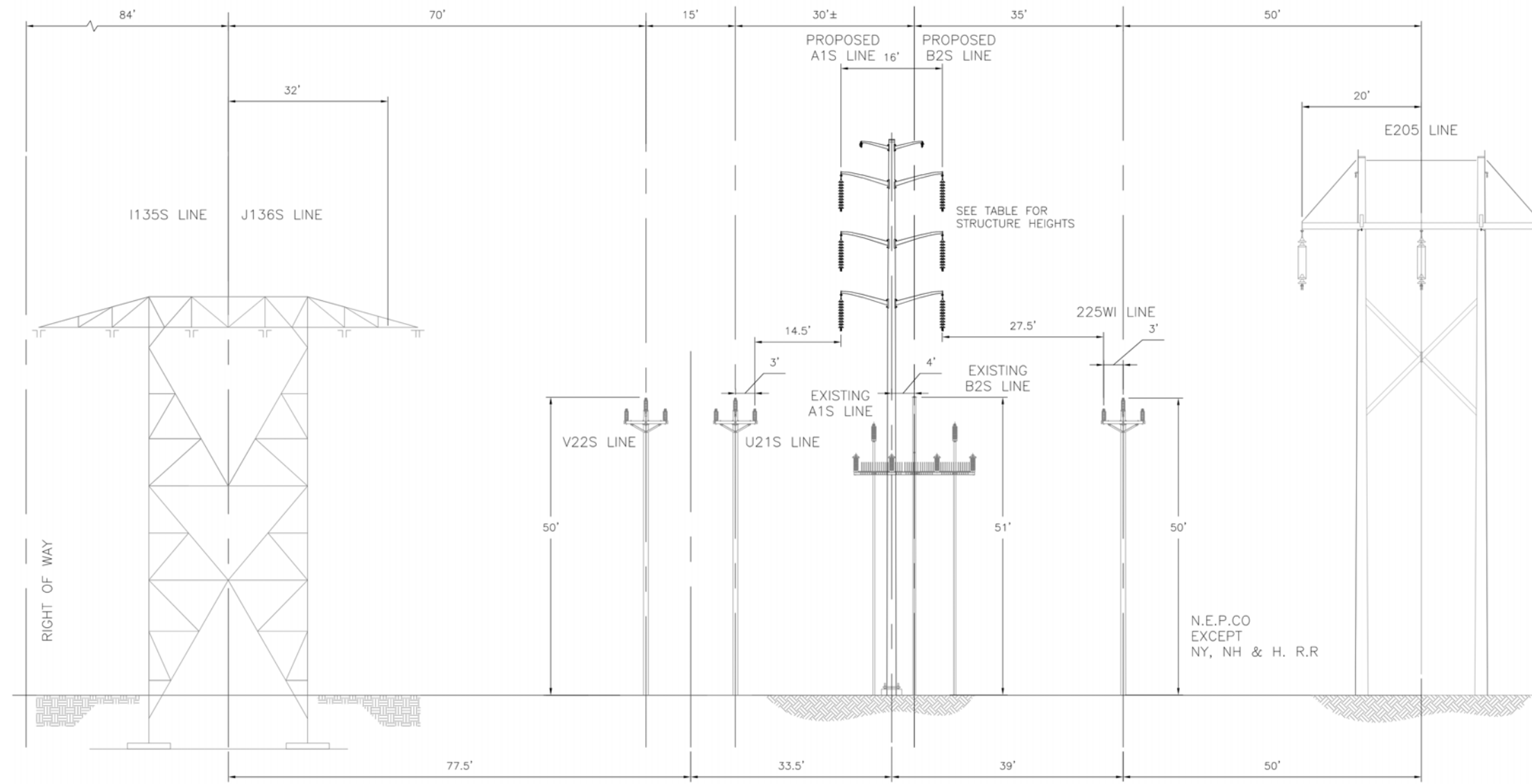


1" = 13,200'

NOT FOR
CONSTRUCTION

DATE: 7/5/2022

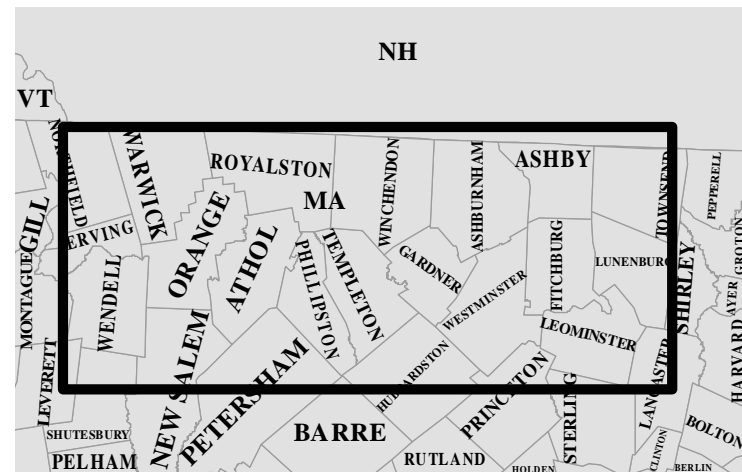
AUTHOR: KANDREWS



**CROSS-SECTION FACING PRATTS JUNCTION SUBSTATION
STRUCTURE 661 - PRATTS JUNCTION SUB. (SECTION)**

Project Vicinity

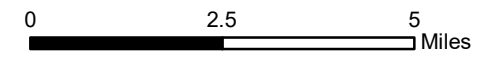
Legend



A1/B2 ACR Project

**Figure 3
Typical Structure Details - A1/B2**

State of Massachusetts
Franklin & Worcester County:
Towns of Athol, Royalston, Sterling, Warwick, Westminster, & Winchendon.
Cities of Fitchburg, Gardner, & Leominster



**NOT FOR
CONSTRUCTION**

DATE: 7/5/2022

1" = 13,200'

AUTHOR: KANDREWS

A1/B2 LINE ASSET CONDITION REFURBISHMENT PROJECT - MASSACHUSETTS
 Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, & Sterling

STATE/REGULATORY AGENCIES

Agency	Email Address	Address
Massachusetts Environmental Policy Act (MEPA) Office	MEPA@mass.gov	MEPA Office 100 Cambridge Street, Suite 900 Boston, MA 02144
Department of Environmental Protection, Boston Office	helena.boccardo@mass.gov	Commissioner's Office One Winter Street Boston, MA 02108
Department of Environmental Protection, Appropriate Regional Office and to each program from which a permit will be sought	kathleen.fournier@mass.gov	DEP/Western Regional Office Attn: MEPA Coordinator State House West - 4th floor 436 Dwight Street Springfield, MA 01103
	andrea.briggs@mass.gov	DEP/Central Regional Office Attn: MEPA Coordinator 8 New Bond Street Worcester, MA 01606
Massachusetts Department of Transportation - Boston	MassDOTPPDU@dot.state.ma.us	Public/Private Development Unit 10 Park Plaza, Suite #4150 Boston, MA 02116
Massachusetts Department of Transportation – District Office	bao.lang@dot.state.ma.us	District #2 Attn: MEPA Coordinator 811 North King Street Northampton, MA 01060
	jeffrey.r.gomes@dot.state.ma.us	District #3 Attn: MEPA Coordinator 499 Plantation Parkway Worcester, MA 01605
Massachusetts Historical Commission	Mail a hard copy of the filing to MHC.	The MA Archives Building 220 Morrissey Boulevard Boston, MA 02125
If the Project is located within five miles of an Environmental Justice Population	EEA Environmental Justice Director MEPA-EJ@mass.gov	MEPA Office Attn: EEA EJ Director 100 Cambridge Street, Suite 900 Boston, MA 02144

<p>If the project site has been in agricultural use within the last fifteen years</p>	<p>barbara.hopson@mass.gov</p>	<p>Department of Agricultural Resources Attn: MEPA Coordinator 138 Memorial Avenue, Suite 42 West Springfield, MA 01089</p>
<p>If the Project site is within or contains designated significant or estimated habitat, or priority sites of endangered or threatened species or species of special concern in accordance with the Massachusetts Endangered Species Act</p>	<p>melany.cheeseman@mass.gov emily.holt@mass.gov</p>	<p>Natural Heritage and Endangered Species Program Division of Fisheries & Wildlife 1 Rabbit Hill Road Westborough, MA 01581</p>
<p>If the Project affects DCR roadways, watersheds or other properties or an ACEC</p>	<p>andy.backman@mass.gov</p>	<p>DCR Attn: MEPA Coordinator 251 Causeway St. Suite 600 Boston MA 02114</p>
<p>If the Project is subject to Greenhouse Gas Emissions Policy or to review by Energy Facilities Siting Board</p>	<p>andrew.greene@mass.gov geneen.bartley@mass.gov</p>	<p>Energy Facilities Siting Board Attn: MEPA Coordinator One South Station Boston, MA 02110</p>
	<p>paul.ormond@mass.gov brendan.place@mass.gov</p>	<p>Department of Energy Resources Attn: MEPA Coordinator 100 Cambridge Street, 10th floor Boston, MA 02114</p>
<p>If the Project is in a municipality served by the Massachusetts Water Resources Authority (MWRA)</p>	<p>katherine.ronan@mwra.com</p>	<p>Massachusetts Water Resource Authority Attn: MEPA Coordinator 100 First Avenue Charlestown Navy Yard Boston, MA 02129</p>

REGIONAL PLANNING AGENCIES

Regional Planning Agency	Email and/or Mailing Address
<p>Franklin Regional Council of Governments (FRCoG)</p>	<p>KMacPhee@frcog.org PSloan@frcog.org and 2 hard copies to: Kimberly MacPhee and Peggy Sloan FRCOG, 12 Olive Street, Greenfield, MA 01301</p>
<p>Montachusett Regional Planning Commission (MRPC)</p>	<p>mrpc@mrpc.org</p>

LOCAL BOARDS/COMMISSIONS/LIBRARIES


Municipality	Email Address	Address
Athol, MA	Board of Selectmen barmentrout@townofathol.org	584 Main Street Athol, MA 01331
	Planning Board esmith@townofathol.org	
	Conservation Commission conservation@townofathol.org	
	Health Department dvondal@townofathol.org	
	Historical Commission jshaughnessy@cwmares.org	
	Library info@athollibrary.org	Athol Library Trustees Athol Public Library 568 Main Street, Athol, MA 01331
Fitchburg, MA	City Council cityclerk@fitchburgma.gov	Fitchburg Legislative Building 700 Main Street Fitchburg, MA 01420
	Board of Health scurry@fitchburgma.gov	
	Community Development MOHara@fitchburgma.gov	718 Main Street Fitchburg, MA 01420
	Conservation Commission MOHara@fitchburgma.gov	
	Historical Commission HistoricCommission@fitchburgma.gov	
	Library librarytrustees@fitchburgma.gov	Fitchburg Library Trustees Fitchburg Public Library 610 Main St. Fitchburg, MA 01420
	Department of Public Works dpwdispatch@fitchburgma.gov	Fitchburg Commission of Public Works 301 Broad Street Fitchburg, MA 01420

Gardner, MA	City Council ekazinskas@gardner-ma.gov	Gardner City Council Council Chamber of City Hall 95 Pleasant Street 95 Pleasant Street Gardner, MA 01440
	Board of Health lisaunders@gardner-ma.gov	
	Cultural Council jderoy@gardner-ma.gov	
	Conservation Commission kguertin@gardner-ma.gov	115 Pleasant Street Gardner, MA 01440
	Planning Board cfucile@gardner-ma.gov	
	Zoning Board mnegron@gardner-ma.gov	
	Library tcaissie@cwmars.org	Levi Heywood Memorial Library 55 West Lynde St. Gardener, MA 01440
Leominster, MA	City Council mnadeau@Leominster-MA.gov	25 West Street, Leominster, MA 01453
	Planning and Development mnadeau@Leominster-MA.gov	
	Conservation Commission c/o City Clerk mnadeau@Leominster-MA.gov	
	Health Department jstephens@leominster-ma.gov	
	Historical Commission lhcomm@leominster-ma.gov	
	Cultural Council LCC01453@gmail.com	
	Zoning Board eirvine@leominster-ma.gov	
	Library alent@leominster-ma.gov	Leominster Public Library 30 West Street, Leominster, MA 01453

Royalston, MA	Select Board Michelle.deline@royalston-ma.gov	P.O. Box 125 Royalston, MA 01368
	Planning Board https://www.royalston-ma.gov/user/212/contact	
	Conservation Commission George01368@yahoo.com	
	Board of Health Michelle.deline@royalston-ma.gov	
	Library royalstonlibrary@gmail.com	
	Historical Commission HDC@royalston-ma.gov	
	Open Space and Recreation Committee Chris.long@royalston-ma.gov	
	Zoning Board Geoff.newton@royalston-ma.gov	
Sterling, MA	Select Board c/o Town Administrator bcaldwell@sterling-ma.gov	1 Park Street Sterling, MA 01564
	Planning Board ppage@sterling-ma.gov	
	Conservation Commission mmarro@sterling-ma.gov	
	Board of Health knickerson@sterling-ma.gov	
	Cultural Council kjayne@sterling-ma.gov	
	Historical Commission c/o Kama Jayne kjayne@sterling-ma.gov	

	Zoning Board ppage@sterling-ma.gov	
	Wachusett Regional School District Committee sherrie_haber@wrsd.net	
Warwick, MA	Selectboard c/o Town Clerk townclerk@town.warwick.ma.us	12 Athol Rd, Warwick, MA 01378
	Planning Board c/o Town Clerk townclerk@town.warwick.ma.us	
	Conservation Commission gbrodski@gmail.com	
	Department/Board of Health c/o Town Clerk townclerk@town.warwick.ma.us	
	Historical Commission c/o Town Clerk townclerk@town.warwick.ma.us	
	Open Space Committee c/o Town Clerk townclerk@town.warwick.ma.us	
	Zoning Board c/o Town Clerk townclerk@town.warwick.ma.us	
	Library warwick@cwmares.org	Warwick Public Library 4 Hotel Road Warwick, MA 01378
Westminster, MA	Select Board c/o Town Clerk esheehan@westminster-ma.gov	11 South Street Westminster, MA 01473
	Planning Department swallace@westminster-ma.gov	
	Conservation Commission mmarro@westminster-ma.gov	
	Health Department aconlin@westminster-ma.gov	
	Historical Commission nlanghart@westminster-ma.gov	

	Cultural Council c/o Town Clerk esheehan@westminster-ma.gov	
	Zoning Board klemay@westminster-ma.gov	
	Department of Public Works jhall@westminster-ma.gov	Department of Public Works 2 Oakmont Avenue PO Box 376 Westminster, MA 01473
	Library nlanghart@westminster-ma.gov	Forbush Memorial Library 118 Main Street PO Box 468 Westminster, MA 01473
Winchendon, MA	Board of Selectmen alabrie@townofwinchendon.com	109 Front Street Winchendon, MA 01475
	Planning and Development nroberts@townofwinchendon.com	
	Conservation Commission MMarro@townofwinchendon.com	
	Board of Health nroberts@townofwinchendon.com	
	Historical Commission doniel@townofwinchendon.com	
	Community Park Committee tnewton@townofwinchendon.com	
	Department of Public Works bellis@townofwinchendon.com	
	Zoning Board nroberts@townofwinchendon.com	
	Library mking@winchendon.com	Beals Memorial Library, Library Trustees 50 Pleasant St. Winchendon, MA 01475

 National Grid Environmental Guidance	Doc No.:	EG-303NE
	Rev. No.:	15
	Page No.:	1 of 50
	Date:	08/06/2020
SUBJECT ROW Access, Maintenance and Construction Best Management Practices for New England		REFERENCE EP-3; Natural Resource Protection

PURPOSE/OBJECTIVE:

This document provides National Grid personnel, consultants and contractors with Best Management Practices (BMPs) for conducting work on electric and natural gas transmission and distribution rights-of-ways (ROWs) and substations in New England.

WHO:

These BMPs are to be followed by all personnel conducting work on Company electric and gas ROWs and substations in New England. These BMPs do not apply to Company employees and contractors performing routine vegetation management activities that are not a part of construction or re-construction projects. Employees and contractors maintaining vegetation on Company ROWs and substations must follow the National Grid ROW Vegetation and Substation Vegetation Management Plans.

DEFINITIONS:

Refer to **Glossary** in **Appendix 1** and **Acronyms** in **Appendix 2**.

WHAT TO DO:

1.0 Project Planning

Prior to the start of any project (proposed new facilities or maintenance of existing facilities), the Project Engineer or other project planner shall determine whether any environmental permits or approvals are required, per the state-specific EG-301 environmental checklists. Any questions regarding which activities may be conducted in regulated areas or within environmentally sensitive areas shall be referred to the National Grid Environmental Scientist or Project Environmental Consultant.

All new construction and maintenance projects shall follow clear and enforceable environmental performance standards, which is the purpose for which these BMPs have been compiled.


1.1 Avoidance and Minimization

Measures shall always be taken to avoid impacts to wetlands, waterways, rare species habitats, known below and above ground historical/archeological resources and other environmentally sensitive areas. If avoidance is not possible, then measures shall be taken to minimize the extent of impacts. Alternate access routes or staging areas shall always be considered. Below is a list of methods that shall be considered where impacts are unavoidable:

- Use existing ROW access where available. Keep to approved routes and roads without deviating from them or making them wider.
- Off-ROW access shall never be assumed and shall be coordinated through National Grid Real Estate before being implemented.
- Where no existing ROW access is present, avoid wetlands and if a wetland crossing is necessary, cross wetlands at the most narrow point possible or at the location of a previously used crossing (if evident). Figure 1 below illustrates this minimization technique.

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 National Grid Environmental Guidance	Doc No.:	EG-303NE
	Rev. No.:	15
	Page No.:	2 of 50
	Date:	08/06/2020
SUBJECT ROW Access, Maintenance and Construction Best Management Practices for New England		REFERENCE EP-3; Natural Resource Protection

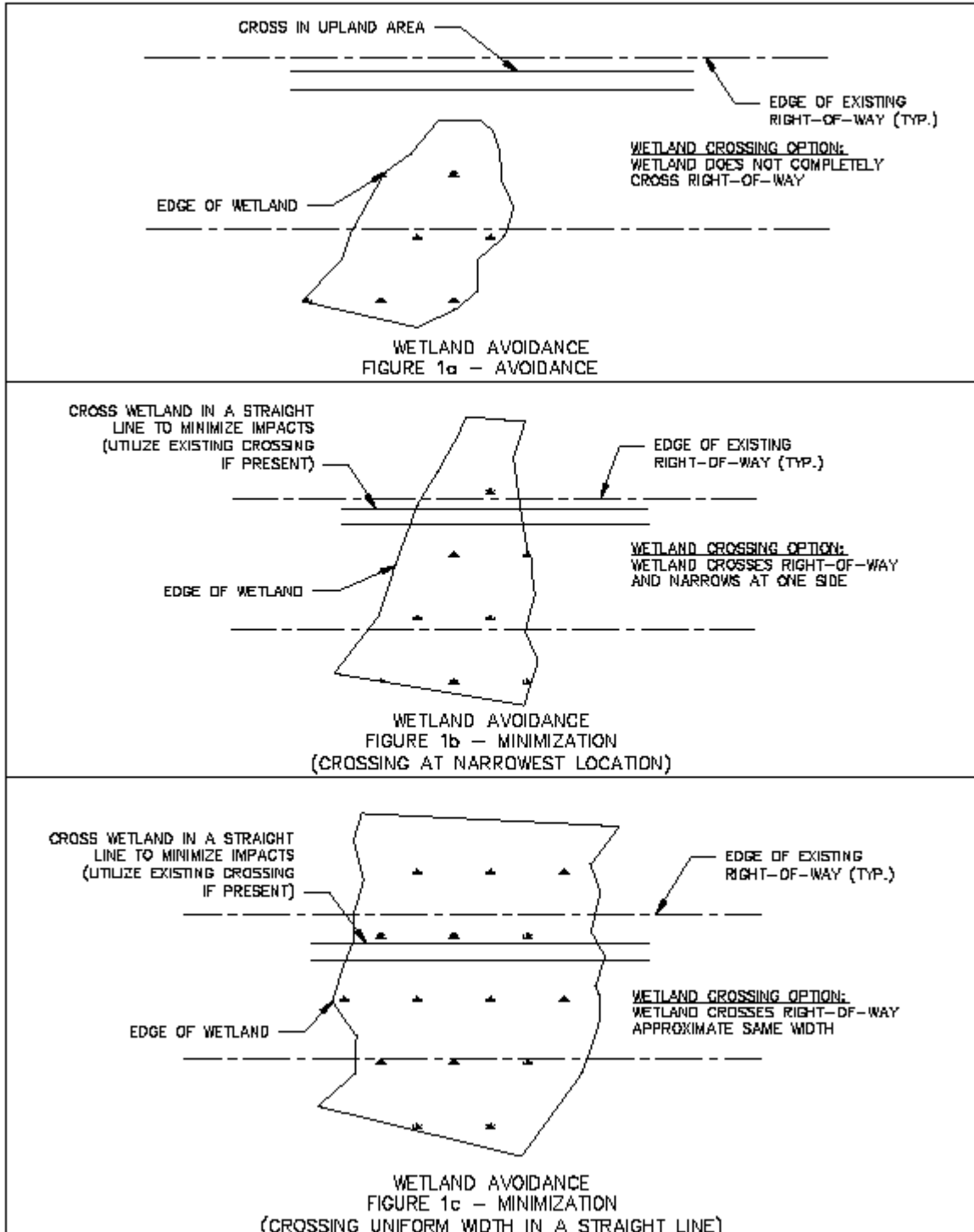
- Avoid and minimize stream crossings.
- Minimize the width of typical access roads through wetlands to a maximum width of 16 feet.
- Conduct work manually (without using motorized equipment) in wetlands, wherever possible.
- Use construction mats in wetlands to minimize soil disturbance and rutting when crossing or working within wetlands. When not using mats for access, standard vehicles shall not be allowed to drive across wetlands without the prior approval of the National Grid Environmental Scientist. Use of a low ground pressure (LGP) vehicle may be a feasible alternative to mats provided that such LGP vehicle use has been reviewed and approved by the National Grid Environmental Scientist. See Section 7.0.
- Coordinate the timing of work to cause the least impacts during the regulatory low-flow period under normal conditions, when water/ground is frozen, after the spring songbird nesting season, and, outside of the anticipated amphibian migration window (mid-February to mid-June). Refer to the United States Army Corps of Engineers (USACE) state-specific General Permit for the definition of the low-flow period in each state at: <http://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/>. A summary table is provided in Section 7.0.
- Seek alternative routes or work methods to minimize impact.

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SUBJECT
ROW Access, Maintenance and Construction Best Management Practices for New England

REFERENCE
EP-3; Natural Resource Protection



Appi

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	Date:	08/06/2020
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1.2 Historically Significant Areas

Areas that have been identified as historically and/or culturally significant shall be avoided in accordance with site-specific avoidance plans, as applicable. Refer to the project-specific Environmental Field Issue (EFI) for any applicable avoidance plans or consult with the National Grid Environmental Scientist. Demarcation of these areas to be avoided shall use staked orange snow fencing or an equivalent physical barrier (not just ribbon flagging) and signage. Refer to Section 14.0 for signage guidance.

1.3 Rare Species Habitat

Work within areas that have been identified as mapped rare species habitat shall follow site-specific requirements, as applicable. In Massachusetts, maintenance activities within mapped habitat (known as Priority Habitat of Rare Species) shall follow the BMPs outlined in the Natural Heritage Endangered Species Program (NHESP)-approved National Grid Operation and Maintenance Plan. Work in mapped rare species habitat may require, at a minimum, turtle training for crews and sweeps of work areas for turtles, botanist identification of rare plant locations and avoidance of these locations, and protection of vernal pools, all prior to the start of work. Demarcation of these areas to be avoided (e.g., rare plant populations, overwintering turtles, nests) shall use staked orange snow fencing or an equivalent physical barrier (not just ribbon flagging) and signage. Refer to Section 14.0 for signage guidance.

Where new substations are being constructed or existing substations are undergoing a rebuild or expansion, and the substations are located in mapped rare turtle habitat, project team members should consider fenceline improvements or measures needed to prevent/eliminate turtle entrance into the substation or allow multiple points for easy egress such that turtles are not trapped within the substation fenceline.

Other requirements may apply in NH, VT and RI. Refer to the project-specific EFI for any applicable measures or consult with the National Grid Environmental Scientist.

1.4 Meetings


Pre-permitting meetings shall take place early in the project development process to determine what permits are triggered by the proposed work and the timeline required for permitting. During these meetings, the team shall develop access plans and BMPs to be used during construction of the project.

Field / Constructability review meetings shall take place on-site to evaluate construction site access and job site set-up, to ensure that the project can proceed as permitted. It is at this point in time where work areas, pulling locations, laydown areas, parking areas, and equipment storage areas are evaluated and located. Off-ROW areas under consideration should be included in this discussion.

Prior to submitting permit plans to regulatory authorities, the construction group (contractor or National Grid) shall review the plans for final sign off.

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Pre-construction meetings are typically held prior to the commencement of all work to appoint responsible parties, discuss timing of work, and further consider options to avoid and/or minimize impacts to sensitive areas. These meetings can occur on- or off-site and shall include all the willing and available stakeholders (i.e., utility employees, contractors, consultants, inspectors, and/or monitors, and regulatory personnel). Training of crews and supervisors of the EFI, Stormwater Pollution Prevention Plan (SWPPP), rare species, and other permit requirements shall be conducted at a pre-construction meeting.

Pre-job briefings shall be conducted daily or otherwise routinely scheduled meetings shall be conducted on-site with the work crew throughout the duration of the work. These meetings are a way of keeping everyone up to date, confirming there is consensus on work methods and responsibilities, and ensuring that tasks are being fulfilled with as little impact to the environment as possible.

The Project Environmental Scientist/Monitor and Construction Project Manager shall communicate regularly (e.g. weekly or bi-weekly meetings or phone conversations) to discuss the work completed since last communication (i.e. work locations, wetland impacts, equipment used, and unexpected delays or work conditions). These meetings or calls shall include the expected schedule of construction for the upcoming week, the long term construction plans, and planned methods for working near/in wetlands. Both the Project Environmental Scientist/Monitor and Construction Project Manager shall work together so the Project complies with all environmental permits and regulations. When changes to the Project scope or agreed work plan are proposed they shall be done so with the final approval of the National Grid Environmental Scientist.

1.5 Communication of Project Specific Environmental Requirements


Project specific environmental concerns, to include sensitive resources, permits, approved access and time-of-year or other restrictions, shall be communicated to the project team and be included as part of the Pre-Bid and Pre-Construction Meetings. Project specific requirements shall be communicated to the project manager/construction manager/engineering group using the following guidelines:

Environmental Field Issue – The EFI will be a full document consisting of narrative, project permits, access and matting plans. A table summarizing pertinent (but not all) permit conditions and the responsible party for those conditions shall be included in the EFI. Copies of all permits should be included as attachments. This will be prepared for most projects with multiple permits or large, complex projects (siting board, Section 404, 401 WQC, SWPPP). There shall be EFI training at the pre-construction meeting. The National Grid EFI template is located in **EI-303NE**.

Simplified Environmental Field Issue – The Simplified EFI is a memorandum containing environmental resources present, project permit(s), access and matting plans and a table summarizing relevant permit conditions and responsible party for those conditions. Copies of all permits should be included as attachments. The Simplified EFI will be prepared for most projects with 1 or 2 permits (Order of Conditions, S404 Cat 1). The Simplified EFI should also be provided for projects that have environmental resources present, but the scope of the project does not trigger environmental permitting (e.g., the scope of work qualifies for maintenance exemption(s)). The resources present

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shall be discussed at the Pre-Bid and Pre-Construction meetings and any changes in scope will require additional review by the National Grid project team.

E-mail delivery of Permit and any Sediment/Erosion control or BMP plan – For those projects with only one permit (eg., MA Order of Conditions, RI DEM permit, RI CRMC permit, NH Utility Notification) or projects with a sediment & erosion control plan (local town requirement or for exempt maintenance work), a copy of the permit and any applicable plan will be emailed to the Project Manager (and the project team where deemed necessary) to be incorporated into the Construction Field Issue.

STORMS work management system input – For STORMS work, no EFI is prepared unless multiple permits are required for the project (see guidance above). If only a MA Order of Conditions, MA Determination of Applicability, RI DEM permit, RI CRMC permit, RI SESC Approval, or NH Utility Notification is required, then the permit is attached in the Documents tab and conditions noted in Remarks/Comments section. Standard STORMS boilerplate language is located in **EI-303NE**.

1.6 Timing of Work

Regulatory authorities may place seasonal or time-of-year restrictions on project construction elements. These time-of-year restrictions may be state or permit-specific, and shall be adhered to.

Work during frozen conditions. Activities conducted once wetland areas are frozen sufficient to minimize rutting and other impacts to the surrounding environment may be authorized by the National Grid Environmental Scientist. Work during this time also generally reduces disturbance of aquatic and terrestrial wildlife movement by avoiding sensitive breeding and nesting seasons. When not using mats for access, vehicles shall not be allowed to drive across wetlands without the prior approval of the National Grid Environmental Scientist.

Work during the regulatory low-flow period. Conducting work during the low-flow period can reduce impacts to surface water and generally avoids spawning and breeding seasons of aquatic organisms. If the water is above normal seasonal levels, adjustments to work activities and methods are required.

1.7 Alternate Access

1.7.1 Manual Access


In some cases such as for smaller projects, work areas can be accessed manually. This includes access on foot through upland and shallow wetland areas, access by boat through open water or ponded areas, and climbing of structures where possible. Smaller projects, such as repair of individual structures, or parts of structures, that do not categorically require the use of heavy machinery, shall be accessed manually to the greatest extent practicable.

1.7.2 Use of Overhead/Aerial Access

Using helicopters can be expensive and is not always feasible, but it may be appropriate in some situations in order to get workers and equipment to a site that otherwise may be very difficult to access. The use of overhead and/or aerial equipment may be beneficial for work in areas where larger water bodies, deep crevices, or mountainous areas hinder ground access. The landing area for

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helicopters shall be reviewed for environmentally sensitive resources. Use of helicopters requires Project Manager and Senior Management approval.

2.0 Inspection, Monitoring and Maintenance

All construction practices and controls shall be inspected on a regular basis and in accordance with all applicable permits and local, state, and federal regulations to avoid and correct ANY damage to sensitive areas.

The construction crews shall be responsible for completing daily inspections, and IMMEDIATELY bring any **damage or observed erosion, or failed erosion controls** to the attention of the Person-In-Charge and the National Grid Environmental Scientist. Where applicable and/or as directed by environmental permits issued for the project, the Project Environmental Consultant shall conduct weekly (at a minimum) inspections of the project work areas and shall document their inspection using the Stormwater, Wetlands & Priority Habitat Environmental Compliance Site Inspection / Monitoring Report form found in **Appendix 3** and issue the report within 24 hours. The Person-in-Charge shall work with the National Grid Environmental Scientist and the Project Environmental Consultant to determine when and how the repairs shall be made.

Project-specific Action Logs and Long-Term Restoration Logs are prepared as needed by the National Grid Environmental Scientist or the Project Environmental Consultant to track issues and/or repairs and assign responsible parties.

3.0 Best Management Practices

The BMP sections presented in this EG address access, construction, snow and ice management, structures in wetlands, access road maintenance and repair, clean-up and restoration standards, ROW gates, field refueling and maintenance operations, management of spills/releases, and a summary of key construction BMPs.

Note that BMPs shown on any permit drawings for a specific project may need to be revised and or supplemented during the execution of a project based on unforeseen or unexpected factors such as extreme weather or unknown subsurface conditions. It is the responsibility of the Contractor to work with the National Grid Environmental Scientist and/or the Project Environmental Consultant to identify necessary changes and to ensure that construction-related impacts to wetlands, water bodies and other environmentally sensitive areas are avoided.


Any deviation from the approved BMPs shown in the EFI and/or SWPPP plans shall be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting or could result in a permit violation.

3.1 Wetland Boundary Demarcation

Prior to the start of any activity conducted under an environmental permit, wetland boundaries shall be reviewed. Flagging for wetland boundaries, stream banks and other resource areas shall be

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refreshed as needed. This may become particularly important when the original flagging was placed in previous seasons and now may have become obscured.

3.2 Sedimentation and Erosion Controls

Appropriate sedimentation and erosion control devices shall be installed at work sites, in accordance with permit conditions and/or regulatory approvals, and as needed to prevent adverse impacts to water resources and adjacent properties.

The overall purpose of such controls is to prevent and control the movement of disturbed soil and sediment from work sites to adjacent, undisturbed areas, and particularly to water resources, public roads and adjacent properties. All proprietary controls shall be installed per manufacturer’s recommendations and specifications.

Appropriate sedimentation and erosion control devices include but are not limited to: silt fencing, straw bales, wood chip bags, straw wattles, compost socks, erosion control blankets, mulch, slope interruption practices, flocculent powder/blocks and storm drain/catch basin inlet protection. Such controls shall be installed between the work area and environmentally sensitive areas such as wetlands, streams, drainage courses, roads and adjacent property when work activities shall disturb soils and result in a potential for causing sedimentation and erosion.

In Massachusetts, use of monofilament-encased wattles shall be avoided in mapped Priority Habitat for snakes and amphibians. For projects with work within mapped Priority Habitat for snakes and amphibians, wattles that are encased in a sock, hemp, fiber, or movable jute netting are required to prevent entrapment. Also, “wildlife gaps” should occur every 50 feet, if possible, given wetland permit conditions. This spacing of the wattles allows snakes and amphibians to move across the ROW. Refer to the Amphibian and Reptile BMPs in **Appendix 4**.

Staked straw bales often serve as the demarcation of the limits of work and/or sensitive areas to be avoided. Work shall never be conducted outside the limit of erosion controls without prior approval from the National Grid Environmental Scientist.


Project plans depict proposed erosion controls, however field conditions may warrant additional practices be implemented (e.g., wet conditions, frozen conditions, poorly drained soils, steep slopes, materials used for work pads, transition areas to construction mats, number of trips across work areas, etc.).

Any deviation from the approved erosion controls shown in the EFI and/or SWPPP plans needs to be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting or result in a permit violation.

Appendix 4 provides typical sketches of common sedimentation and erosion controls. If a SWPPP is required for the project, maintenance and inspection of erosion controls shall follow the SWPPP requirements. Sedimentation and erosion controls shall be properly maintained and inspected on a

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periodic basis, until work sites are properly stabilized and restored. Inspections shall be documented using the Inspection Form “Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection/Monitoring Report” (**Appendix 3**).

The sequence and timing of the installation of sedimentation and erosion control measures is critical to their success. Sedimentation and erosion controls shall be installed prior to commencing construction activities that may result in any soil disturbance or cause otherwise polluted site runoff. Inspection of these devices may be required by the National Grid Environmental Scientist or by regulators prior to the start of work. The installation of water bars and other erosion control measures shall be installed shortly thereafter.

3.3 Concrete Wash Outs

Concrete wash outs shall be used for management of concrete waste. Concrete and concrete washout water shall not be deposited or discharged directly on the ground, in wetlands or waterbodies, or in catch basins or other drainage structures. Where possible, concrete washouts shall be located away from wetlands or other sensitive areas. Consult the National Grid Environmental Scientist on proposed concrete wash out locations prior to their use. Following the completion of concrete pouring operations, the wash outs shall be disposed of off-site with other construction debris. Refer to BMPs in **Appendix 4**.

3.4 Construction Activities in Standing Water

The use of silt curtains or turbidity barriers may be required when working in or adjacent to standing water such as ponds, reservoirs, low flowing rivers/streams, or coastal areas. Silt curtains and turbidity barriers prevent sediment from migrating beyond the immediate work area into the resource areas.

Coffer dams constructed using sheet piling or large sandbags (Trade names such as “the Big Bag” or “DamItDams”) may be used to temporarily isolate and contain a work area in standing water.

When working in standing water, an oil absorbent boom, in addition to a silt curtain or other temporary barrier, shall be placed around the work area for spill prevention.


Work in drinking water reservoirs or other waters may require extensive regulatory agency review, even for maintenance work, which could result in additional time required for permitting, review and material procurement prior to the start of work.

3.5 Dewatering

Where excavations require the need for dewatering of groundwater or accumulated stormwater, the water shall be treated before discharge. Appropriate controls include dewatering basins, flocculent blocks, filter bags, filter socks, or weir tanks. Schematics of these BMPs are included in **Appendix 4**. Water trucks or fractionation tanks may be utilized if watertight containers are desired for controlled on-site discharge or for off-site discharge into an approved dewatering area when site restrictions make it difficult to utilize other dewatering methods on-site. Dewatering discharge water shall never be directed into wetlands, streams/rivers, other sensitive resource areas, catch basins, other

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stormwater devices, or substation Trenwa trenches. Dewatering flow shall be controlled so that it does not cause scouring or erosion through the use of a dewatering basin, filter sock, or equivalent. If it is determined that the chosen controls are not appropriately filtering the fine sediment from the dewatering pumpate then the National Grid Environmental Scientist shall be notified immediately and the controls shall be revised or supplemented.

When establishing a dewatering basin, consideration should be given to the anticipated volume of water and rate of pumping in determining the size of the dewatering basin. Dewatering basins shall be constructed on level ground. Once pumping commences, the basin shall be monitored frequently to assure that the rate of water delivery to the structure is low enough to prevent water from flowing, unfiltered, over the top of the basin walls. The basin shall be monitored throughout the dewatering process because the rate of filtration shall decrease as sediment clogs the filter fabric. If the basin is not appropriately filtering the fine sediment from the dewatering pumpate then the basin may need to be supplemented with a flocculent block. Field conditions shall dictate how often the basin should be inspected.

Distance to sensitive areas, direction of flow (toward or away from protected, or sensitive areas, such as wetlands, ponds, or streams), amount of vegetative ground cover between the basin and nearby sensitive areas, ground conditions (ledge, frozen, etc.), volume of water being pumped, and pump-rate, are some of the factors to be considered when determining an inspection frequency. Clogged filter fabric shall be replaced and accumulated sediment shall be removed as necessary from the basins to maintain efficacy.

Any new dewatering location (not previously reviewed and approved by the National Grid Environmental Scientist during project planning or permitting) shall be reviewed and the discharge location approved by the National Grid Environmental Scientist before use.

Complex projects that require large scale dewatering shall require individual review by the National Grid Environmental Scientist and may trigger additional permitting.

Dewatering in areas of known chemical contamination may require a separate NPDES permit, or other approval, and treatment or containment system. Consult with the National Grid Environmental Scientist.


3.5.1 Overnight Dewatering

Some projects may necessitate 24-hour dewatering for on-site construction activities. Overnight dewatering will be evaluated on a case-by-case basis by the National Grid Environmental Department.

If it is necessary to conduct overnight dewatering on a project, a dewatering plan must be submitted to the Environmental Department for review and approval **5 business days prior to beginning dewatering activities**. Sufficient knowledge of flow, discharge, and re-infiltration rate of water must be obtained and submitted for review. The Environmental Department

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may require monitored dewatering for a period of time in order to provide this data in support of a request for 24-hour dewatering. The dewatering plan must include at a minimum:

1. Location of dewatering system, system components (basin, frac tank, etc), and materials.
2. Location of discharge and distance from closest wetland.
3. Location of erosion controls. A secondary perimeter of erosion controls will be required around the dewatering system for overnight dewatering.
4. Peak flow, discharge rate and re-infiltration rates.
5. Visual monitoring plan for discharge. Expected duration of dewatering.
6. Emergency provisions if overnight, unattended dewatering is proposed.

3.5.2 Dewatering Clean Up/Restoration

Basins shall be cleaned and removed as soon as dewatering is complete. Sediment removed from the dewatering basin shall be allowed to dry before being disposed of by evenly spreading it over unvegetated upland areas where erosion is not a concern if clean or removing it from the site for proper disposal. Off-site trucking of wet soils is prohibited. The sediment disposal area shall be approved by the National Grid Environmental Scientist or the Project Environmental Consultant prior to use. Stabilization measures shall also need to be implemented and approved by the National Grid Environmental Scientist or the Project Environmental Consultant. Soils/sediments shall be dewatered and dried to the point practicable for either on-Site reuse or off-Site transport.

3.6 Check Dams

Check dams are a porous physical barrier installed perpendicular to concentrated storm water flow. They are used to reduce erosion in a swale by reducing runoff energy (velocity), while filtering storm water, thereby aiding in the removal of suspended solids.


Check dams should only be used in small drainage swales that shall not be overtopped by flow once the dams are constructed. These dams should not be placed in streams. Check dams are typically installed in ROWs or on other construction sites prior to the start of soil disturbing work. Per the Rhode Island Soil Erosion and Sediment Control Handbook, no formal design is required for a check dam if the contributing drainage area is 2 acres or less and its intended use is shorter than 6 months; however, the following criteria should be adhered to when specifying check dams.

- The drainage area of the ditch or swale being protected should not exceed 10 acres.
- The maximum height of the check dam should be 2 feet.
- The center of the check dam must be at least 6 inches lower than the outer edges.
- The maximum spacing between the dams should be such that the toe at the upstream dam is at the same elevation as the top of the downstream dam.

Per the NHDES stormwater manual, the use of check dams should be limited to swales with longitudinal slopes that range between 2 to 5 percent that convey drainage from an area less than 1 acre. Existing conditions that exceed these limitations should be assessed in the field and discussed

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with the National Grid Environmental Scientist to determine the viability of this BMP for the specific application. Check dams are often comprised of stone, straw bales, sand bags, or compost/silt socks. Use of check dams should be coordinated with the National Grid Environmental Scientist to ensure that the material selection, spacing and construction method are appropriate for the site. Check dams composed of biodegradable materials (e.g. straw bales or wattles, wood chip bags) may require periodic replacement for continued proper functioning¹. Refer to BMPs in **Appendix 4**.

3.7 Water Bars

Water bars should be used on sloping ROWs to divert storm water runoff from unstabilized or active access roads when needed to prevent erosion. Surface disturbance and tire compaction promote gully formation by increasing the concentration and velocity of runoff. Water bars are constructed by forming a ridge or ridge and channel diagonally across the sloping ROW. Each outlet should be stable. The height and side slopes of the ridge and channel are designed to divert water and to allow vehicles to cross. When siting water bars, consideration shall be given to the sensitivity of the area receiving the diverted runoff. For example, runoff should not be directed into a wetland, waterbody, other environmentally sensitive areas, or to private property or public roadways. Refer to BMPs in **Appendix 4**.

3.8 Retaining Walls

In some situations, retaining walls comprised of concrete blocks, gabions, boulders or other comparable materials may be required to stabilize the shoulder of existing access roads and/or supplement required erosion controls. Installation of such measures shall not be allowed as a maintenance activity. Should these controls be considered for a project, it shall be reviewed by the National Grid Environmental Scientist, as design and additional permitting may be required.


3.9 Slope Stabilization

Temporary slope stabilization practices help to keep exposed, erodible soils stabilized while vegetation is becoming established. Acceptable temporary slope stabilization practices may include the use of erosion control blankets, or hydraulic erosion control. Erosion control blankets, often comprised of natural fibers (e.g., jute, straw, coconut, or other degradable materials) are a useful slope stabilization, erosion control and vegetation establishment practice for ditches or steep slopes. Blankets are typically installed after final grading and seeding for temporary or permanent seeding applications. Hydraulic erosion control practices, including Bonded Fiber Matrix or hydroseed with a soil stabilizer (e.g., tackifier and/or mulch) may be an acceptable or desirable alternative form of temporary slope stabilization. For all practices, manufacturer's specifications should be followed for installation depending on slope and other field conditions. Consult the National Grid Environmental Scientist prior to selecting and installing any slope stabilization practices. Refer to BMPs in **Appendix 4**.

¹ Grass growth on a biodegradable type check dam is evidence that the material is decomposing. While this doesn't mean it is no longer functioning, it means it may be in a weakened condition and could potentially fail under high flow velocity. It is acceptable for grass to be growing on a stone check dam.

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3.10 Maintenance of Sedimentation and Erosion Controls

Sedimentation and erosion controls shall be maintained in good operational condition during the course of the work. This includes, but is not limited to, replacing straw bales that are no longer in good condition, re-staking straw bales, replacing or re-staking silt fence, and removing accumulated sediment. Remove sediment before it has accumulated to one half the height of any exposed silt fence fabric, straw bales, other filter berm, check dams or water bars. Accumulated sediment shall be removed from sedimentation basins to maintain their efficacy. Manage the removed sediment by evenly spreading it over unvegetated upland areas where erosion is not a concern, by stockpiling and stabilizing, or by disposing of off-site. Stabilization measures shall also need to be implemented and approved by the National Grid Environmental Scientist or the Project Environmental Consultant. Where a SWPPP has been prepared for a specific site, the guidelines documented therein shall govern the management of sediment.

4.0 Right-of-Way (ROW) Access

Whenever possible, access shall be gained along existing access routes or roads within the ROW. However, in some cases there is no existing access. In many cases, temporary access can be utilized. The following practices provide general guidance on accessing a ROW. Check with a National Grid Environmental Scientist to determine if any environmental permitting is required before utilizing a temporary access.

Note that the building of new roads or enlargement of existing roads is **prohibited** unless this activity is allowed by a project-specific permit, and the new roads appear on the Site Plans that were authorized in the regulatory approvals.

4.1 Off-ROW Access

Off-ROW access shall be evaluated for wetlands, rare species, cultural resources and other potential sensitive receptors, as applicable. National Grid Real Estate and Stakeholder Relations shall also be contacted as soon as possible once off-ROW access is determined to be needed.


4.2 Stabilized Construction Entrance/Exit for Access to ROWs from Public or Private Roads

A suitable (minimum 15-foot wide by 50-foot long) construction entrance/exit shall be installed at the intersection of the ROW access road/route with public/private paved roads, or other such locations where equipment could track mud or soil onto paved roads. The construction entrance/exit should be comprised of clean stone installed over a geotextile fabric. Geotextile fabric may be omitted for permanent construction entrances/exits on a case-by-case basis with the approval of the National Grid Environmental Scientist. Refer to BMPs in **Appendix 4**.

Construction entrance areas shall be monitored and maintained to ensure that stone or other material is not deposited onto the roadway, causing a safety concern. Where track-out of sediment has occurred onto a roadway, it shall be swept off the road by the end of that same work day.

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If a construction entrance/exit is clogged with sediment and no longer functions, the sediment and stone may require removal and replacement with additional clean stone (clean stone refreshment) to ensure this tracking pad is performing its intended function adequately. Heavier traffic use may require this clean stone refreshment multiple times throughout a project. Reinforcement of these stabilized construction entrance/exits with asphalt binder or asphalt millings is not likely to be considered “maintenance” and may trigger additional permitting requirements². In some cases, heavily used construction entrances/exits may benefit from the installation of a 5-15 foot strip of asphalt binder or asphalt millings closest to the paved roadway to capture any stone that is tracked from the stone apron. Such cases shall be evaluated on an individual basis with the National Grid Environmental Scientist.

Once work is complete, the construction entrance/exit shall either be removed or retained, depending upon future maintenance-related access needs, property ownership, and/or project-specific approvals. If removed, the area shall be graded, seeded (if adequate root and seed stock are absent) and mulched. Proper approvals for leaving access roads in place shall be obtained; contact the National Grid Environmental Scientist and Property Legal.

4.3 Maintenance of Existing Access Roads

In many cases, the existing access road may need to be maintained to allow passage of the heavy equipment required for scheduled maintenance work. Access roads cannot deviate from the approved and permitted access plans. Maintenance of these roads may include adding clean gravel or clean crushed stone to fill depressions and eroded areas. This activity shall be conducted only within the width of the existing access road footprint and does not include widening existing access roads


If gravel begins to migrate onto the existing vegetated road shoulder, this gravel shall be removed during the project and/or after the completion of use of the road to ensure the road fill is not spreading into adjacent resource areas, or resulting in the road becoming much wider than its pre-existing or permitted condition. In some areas of mapped rare species habitat or other sensitive areas where project-specific permit conditions require the prevention of the migration of sediments into adjacent resources, an engineered stabilization system (e.g., GeoWeb or similar) may be suitable to prevent sedimentation while allowing for unrestricted wildlife migration.

In Massachusetts, any proposed widening of access roads in turtle Priority Habitat would require individual consultation with NHESP and, depending on the level of impact proposed, may require a Project Review filing. The limited filling of ruts or potholes is compatible with the National Grid Operation and Maintenance Plan approved by NHESP under the Massachusetts Endangered Species Act, however, severely rutted access roads in turtle Priority Habitat that require extensive linear feet of stone for safe passage will require individual consultation with NHESP.

² Depending on the road, use of an asphalt binder or asphalt millings as a construction entrance/exit may trigger state or local permit requirements.

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Major reconstruction projects may require multiple permits. In all cases, the fill to be used for existing access roads shall be clean and free of construction debris, trash or woody debris. Use of processed gravel may be approved by the Person-In-Charge and the National Grid Environmental Scientist, on a case-by-case basis. If clean stone is used then addition of more erosion controls may not be necessary.

4.5 Maintenance of Existing Culverts

Damaged culverts may not be repaired or replaced without consulting with the National Grid Environmental Scientist to determine if a permit is required. For functioning culverts, care shall be taken to protect adjacent wetlands and watercourses by installing appropriate sedimentation and erosion controls around the downstream end of the culvert. Culverts shall be repaired/replaced in kind and shall not be changed in size unless approval has been obtained from the National Grid Environmental Scientist. In-kind replacement is replacement using the same material, functional inverts, diameter and length as the existing culvert. Changes to any of these characteristics shall require permitting. Installation of any **new** culvert is not allowed without obtaining all necessary permits first. Refer to BMPs in **Appendix 4**.

If, at the time of anticipated replacement, there is heavy flow through the culvert, the Person-In-Charge shall consult with the National Grid Environmental Scientist, to verify whether the culvert shall be replaced at that time. Water may need to be temporarily diverted during culvert repair/replacement. There typically are seasonal restrictions limiting both the replacement of existing culverts as well as installation of new culverts to the low-flow period. The low-flow period can vary from state to state. If any unexpected conditions are encountered during culvert replacement, the National Grid Environmental Scientist shall be contacted immediately prior to the work being completed for additional consultation.

4.6 Temporary Construction Access over Drainage Ditch or Swale


In some situations, construction access from paved roads onto ROWs may require the crossing of drainage ditches or swales along the road shoulder. In these situations, the installation of construction mats, mat bridges or temporary culverts may facilitate construction access over the ditches or swales. These culverts shall be temporary only, sized for peak flow, and shall be removed after construction is complete. Consult with the National Grid Environmental Scientist prior to installation. In addition, if access over existing culverts may require extending the culvert, consult with the National Grid Environmental Scientist. Refer to BMPs in **Appendix 4**.

4.7 Construction Material along ROW

After preparing a site by clearing and/or installing any necessary erosion and sediment controls and prior to the start of construction, material such as poles, cross-arms, cable, insulators, stone and other engineered backfill materials may be placed along the ROW, as part of the project. The stockpiling of stone and other unconsolidated material on construction mats shall be avoided, if determined necessary due to access and work pad constraints, the material must be placed on a geotextile fabric and be properly contained with a sedimentation barrier such as straw wattle. No construction material shall be placed in wetlands or other sensitive resource areas unless authorized by the National Grid Environmental Scientist or Project Environmental Consultant.

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5.0 Winter Conditions

5.1 Snow Management

Refer to **Appendix 6** for the current Snow Disposal Guidelines.

5.2 De-Icing

Where allowed, calcium chloride is preferred as a de-icing agent when applied according to manufacturer's guidelines in upland areas. Sand shall be used on construction mats through wetland areas.

Consult with the National Grid Environmental Scientist on de-icing agents when working in a facility or substation close to resource areas. Many municipalities have specific requirements for de-icing agents allowed within 100 feet of wetland resources and other sensitive areas.

5.3 Snow and Ice Management on Construction Mats

Proper snow removal on construction mats shall avoid the formation of ice. To avoid the formation of ice, snow shall be removed from construction mats before applying sand. Prior to their removal from wetlands, sand shall be collected from the construction mats and disposed of in an upland area. A round street sweeping brush mounted on the front of a truck may be an effective way to remove snow from construction mats. Propane heaters may also be suitable solutions for snow removal and/or de-icing of construction mats.

Once construction mats are removed, wetlands shall be inspected for build up of sand that may have fallen through construction mats. Care shall be taken to inspect wetland crossings as each mat is removed to ensure sand is properly removed and disposed of off-site.


6.0 Construction Mats

The use of construction mats allows for heavy equipment access within wetland areas. The use of construction mats minimizes the need to remove vegetation beneath the access way and helps to reduce the degree of soil disturbance and rutting in soft wetland soils. Construction mats most often used by National Grid are wooden timbers bolted together typically into 4-ft by 16-ft sections, wooden lattice mats, or composite mats. In some cases, construction mats or other mats are used for staging or access in upland areas based on site conditions (e.g., agricultural field access). Refer to BMPs in **Appendix 4**.

Typically construction mats may be installed on top of the existing vegetation, however in some instances cutting large woody vegetation may be required. Check with National Grid Environmental Scientist prior to cutting or clearing vegetation for construction mat placement.

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Where an extended period of time has lapsed since wetland delineation and start of construction, and new vegetative growth has concealed wetland flagging or flagging is simply no longer obviously visible, wetland boundaries should be re-flagged where necessary prior to the installation of matting.

Follow the approved plans in the EFI for construction mat installation and do not deviate from the plans. **Any deviation from the approved plans needs to be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting, require stopping the project or result in a permit violation or revocation.**

6.1 Construction Mats and Mowing

Close coordination with the mowing contractor shall be required to ensure that access plans are followed, and construction mats are utilized when necessary. Sometimes mowing contractors may have to work off the leading edge of a construction mat to mow in order to lay the next construction mat and continue further into the wetland. Under no circumstances shall trees or shrubs be allowed to be pulled out of the wetland by the root ball. The root ball of trees and shrubs shall remain intact. Chipping debris and excessive amounts of slash shall not be placed in wetlands or other resource areas. In some instances, it may be beneficial to pile a reasonable amount of slash within a nearby upland area to create habitat for wildlife. This activity shall be approved by the National Grid Environmental Scientist.


6.2 Stream Crossings and Stream Bank Stabilization

Stream crossings shall be bridged with construction mats or other temporary minimally-intrusive measures unless fording is acceptable for the site and is authorized by the National Grid Environmental Scientist. Care shall be taken when installing a construction mat bridge to insure that the stream bed and banks are not damaged during installation and removal and that stream flow is not unduly restricted. Where stream width allows, construction mats shall be installed to span the watercourse in its entirety without stringer placement in the water or any restriction of stream flow. Environmental permits may be required to cross or disturb protected waters, depending upon state-specific regulatory requirements. Refer to BMPs in **Appendix 4**. Immediately following construction mat removal, all stream banks shall be stabilized and restored to prevent sedimentation and erosion.

6.3 Cleaning of Construction Mats

Mats shall be certified clean by the vendor prior to installation. The vendor shall use the certification form provided as **Appendix 5** to document compliance. Clean is defined as being free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site. Any equipment or timber mats that have been placed or used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project site to prevent the spread of invasive species from one area to another³. **Mats shall be cleaned prior to being removed at the completion of the project: exceptions to this requirement**

³ On ROW projects where multiple wetlands may be dominated by the same invasive species, cleaning may not be required for movement along the ROW. Check with the National Grid Environmental scientist for guidance.

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may be made on a case-by-case basis. Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of construction mats.

6.4 Stone Removal for Construction Mat Placement

For situations where the matting contractor determines that stones or boulders must be removed or relocated within wetland areas in order to install safe and level structure work pads or access roads the boulders shall be moved in a manner which does not result in significant soil disturbance (i.e., pushing with a bull dozer is not allowed). The boulders shall not be placed on any existing vegetated areas within wetlands or within vernal pools. When numerous boulders shall be removed from a wetland area, they shall be deposited in an upland area outside of the flagged wetland limits, outside of any cultural resource areas and outside of any RTE species populations. Any boulders that shall be placed within buffers (In MA, the 100-foot buffer zone, and in RI, the 50-foot Perimeter Wetland, 100-foot or 200-foot Riverbank Wetlands) shall be placed to avoid causing soil disturbance and they shall be within an approved limit of work. When there is a significant number of boulders that need to be removed, the National Grid Environmental Scientist shall be consulted for guidance.

6.5 Transition onto Mats

Erosion controls and stone or wood chip ramps shall be installed to promote a smooth transition to and minimize sediment tracking onto construction mats. Geotextile may be added beneath stone or wood chip transitions to facilitate removal, as necessitated by site or permit conditions. Mat transitions shall be removed once construction mats have been removed and during restoration. Refer to BMPs in **Appendix 4**.

6.6 Construction Material on Mats


The stockpiling of stone, drill spoils and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Additional controls, such as watertight mud boxes and geotextile/filter fabric over or between construction mats shall be considered for stockpile management. If material is placed on construction mats and falls through into wetlands, the material must be removed by hand. Saturated soils shall be allowed to dewater prior to off-site transport for sufficient time to ensure that water/sediment is not deposited onto construction mats or public roads during transport. Heavy machinery shall not be left overnight on mats located within floodplain unless approved by the National Grid Environmental Scientist, the machinery is still in use, and removal of the equipment requires the use of additional equipment to move it and would increase vehicle trips in/ou of wetlands. In these situations and when approved by the National Grid Environmental Scientist, the equipment shall be secured against vandalism and secondary containment measures shall be employed where feasible. Mat anchoring shall be evaluated, see below.

6.7 Mat Anchoring

The National Grid Environmental Scientist and Project environmental consultant shall indicate to the project team when mat anchoring may or shall be necessary. The matting contractor will propose the method of mat anchoring, which will be approved by the National Grid Environmental Scientist and the

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National Grid Construction Supervisor. The need for anchoring should be noted in the project EFI, on the project access and matting plans, and in the scope of the bid document (if externally sourced).

Anchoring of construction mats should be considered when any of the following conditions are presented at a project work location:

Location	Considerations
Stream crossings Shorelines of Ponds/Lakes Wetlands Floodplains	When located in a mapped flood area (A). When mapped 100-year flood elevations (AE) are greater than 2 ft above existing grades. Where past flash flood events have occurred. Where steep terrain is present or surrounds the project location. When mats will be in place during hurricane season for greater than 2 weeks.
Tidal areas	When located in a Velocity (V or VE) Zone. When mats will be in place during a moon tide cycle. When mats will be in place during hurricane season for greater than 2 weeks.

Examples of mat anchoring are provided below, but the implementation methods for anchoring mats are not limited to these examples. Where anchoring is determined to be necessary, the matting contractor should propose a method suitable based on field conditions and that takes crew safety, slip/trip/fall hazards, size of matting footprint, and other project and site-specific factors into consideration. Refer to BMPs in **Appendix 4**.

Limited sets of mats

- Cable or rope in chain pockets and run linearly, or
- Linear ropes anchored using helical screws, manta ray anchors, or posts.

Larger sets of mats or those without chain pockets


- Chain link fence posts or other posts driven in along mat edge every 3-4 feet and ropes then laced across mats between opposing posts before storm event, or
- Anchor bolts added to mats, then cable is laced between bolts and tied to helical or manta ray anchor.

6.8 Corduroy Roads

Corduroy roads are a wetland crossing method where logs are cut from the immediate area and used as a road bed to prevent rutting from equipment crossing. This technique is designed to be used in areas of wetland crossings where there is no defined channel or stream flow and should never be used in streams. Corduroy logs shall be placed in the narrowest area practicable for crossing with the logs

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placed perpendicular to the direction of travel across wet area. The use of corduroy logs shall only be in emergencies when approved by the National Grid Environmental Scientist or when they have been specifically permitted as part of a project. Refer to BMPs in **Appendix 4**.

6.9 Construction Mat Removal

Once construction mats are removed, wetlands shall be inspected for build up of sand or other materials that may have fallen through construction mats. Care shall be taken to inspect wetland crossings as each mat is removed to ensure any materials are properly removed and disposed of off-site.

6.10 Utility Air Bridging

In ROWs where other utility facilities (including but not limited to gas, oil, fiber optic, electric, water, and sewer) are co-located within the transmission ROW, bridging may be required to cross those facilities. The project team shall coordinate with the respective utility company prior to determining if bridging or permanent crossings are required.


7.0 LGP Equipment Use

Only when approved by the National Grid Environmental Scientist on a case-by-case basis shall equipment with a LGP **psi that meets the state-specific USACE General Permit requirement when loaded** be allowed to access through wetlands. Refer to the state-specific General Permit for the definition of LGP in each state at: <http://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/>, or to the summary table provided below. The National Grid Environmental Scientist's approval of the use of LGP equipment through wetlands depends on several criteria including:

- Time of year. LGP equipment use may be allowed if weather and field conditions at the time of construction are suitable to eliminate/minimize the concern of rutting or other impacts. Frozen, frozen snow pack, low flow, drought conditions, or unsaturated surface soil conditions are typically acceptable conditions. Spring and fall construction, due to the typical higher precipitation, are not suitable times of year for LGP equipment use.
- Number of trips. Multiple trips through a wetland have shown to increase the potential for damage and require matting. LGP equipment use shall likely only be approved if trips are limited to one trip in and one trip out.
- Type of wetland system. Some wetlands have harder soils/substrate, and may be passable without causing significant damage. Some of the wetlands along National Grid ROWs have existing hard bottom roads that have been vegetated over time and may be traversed with LGP equipment without construction mats.
- Emergencies. LGP equipment use may be allowed during emergency or storm conditions for outage restoration.
- State-specific USACE General Permit Performance Standards. The standard is for no impact to the wetland, which may be obtained by using LGP equipment **when loaded**). *"Where construction requires heavy equipment operation in wetlands, the equipment shall either have low ground*

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pressure (as specified in the USACE GP), or shall not be located directly on wetland soils and vegetation; it shall be placed on construction mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation.”

- Local bylaws. Municipal wetland bylaws, where applicable, shall be reviewed for prohibitive conditions or applicable performance standards.


LGP equipment is prohibited in the following resources areas:

- Stream crossings
- State listed-species habitat
- Outstanding Resource Waters (ORWs)
- Vernal pools
- Archaeological sensitive areas

Where LGP equipment use is desired in lieu of construction mats, the construction supervisor should identify these areas on marked-up access plans. A site visit with the Project Environmental Monitor should be scheduled to assess if the proposed locations are potential candidates. The Project Environmental Monitor will document potentially suitable locations and dismiss others as unsuitable.

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ACOE New England District General Permit Requirements

State	Restrictions	Maximum PSI (when loaded) for Use without Mats	Reference
MA	<p><i>One of the following must apply:</i></p> <p>Equipment operated within wetlands shall:</p> <ul style="list-style-type: none"> a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Equipment must be operated on adequately dry or frozen conditions such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. 	3 psi	MA General Permit, General Condition 13
NH	<p><i>One of the following must apply:</i></p> <p>Equipment operated within wetlands shall:</p> <ul style="list-style-type: none"> a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands. 	4 psi	NH General Permit, General Condition 17
VT	<p><i>One of the following must apply:</i></p> <p>Equipment operated within wetlands shall:</p> <ul style="list-style-type: none"> a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. <p>Note: Written authorization from the Corps required to waive the use of mats during frozen or dry conditions.</p>	3 psi	Vermont General Permit, General Condition 14
RI	<p><i>One of the following must apply:</i></p> <p>Equipment operated within wetlands shall:</p> <ul style="list-style-type: none"> a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. 	6 psi	Rhode Island General Permit, General Condition 15

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State	Restrictions	Maximum PSI (when loaded) for Use without Mats	Reference
	Note: Written authorization from the Corps required to waive the use of mats during frozen or dry conditions.		

Due to the fact that ground conditions may change between the time of the evaluation and construction, LGP equipment approval is required **at the time of construction for each wetland crossing** and shall be dependent upon the above conditions. In addition, LGP equipment use and approval shall be assessed by the National Grid Environmental Scientist or Project Environmental Monitor during construction on a continuing basis

Once a location is approved for the use of LGP equipment:

- The Construction Supervisor must check-in with the Project Environmental Monitor at least two weeks before construction begins to ensure conditions remain suitable for LGP equipment use, and weather conditions are favorable.
- The Project Environmental Monitor must observe the equipment when in use.
- LGP equipment use shall cease immediately if field conditions are found to be unsuitable (i.e. soil rutting greater than six inches or the destruction of vegetation root systems beyond the capacity of natural revegetation).
- **If wetlands damage occurs, the use of the LGP equipment shall be suspended, and the wetlands be restored.**
- Any LGP equipment used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project site to prevent the spread of invasive species from one area to another.

8.0 Soil Disturbing Activities

8.1 Dust Control


Cutting activities shall be conducted to minimize the impacts of dust on the surrounding areas. Dust suppression is an important consideration. Water or other National Grid approved equivalent in accordance with the manufacturer's guidelines may be used for dust control along ROWs in upland areas. During application of water for dust control, care shall be taken to ensure that water does not create run-off or erosion issues. Refer to BMPs in **Appendix 4**.

8.2 Clearing

Clearing is not allowed without specific permission as it constitutes soil disturbance under several regulatory programs and may trigger permitting by increasing the project's footprint of disturbance. If clearing is required for a project, the limit of clearing shall be established with flagging or construction

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fencing and/or erosion controls. Clearing shall be done in accordance with project specific permits. Following the completion of clearing, the limits of work shall be re-established. Refer to BMPs in **Appendix 4**.

8.3 Grubbing

Grubbing is not allowed without specific permission as it constitutes soil disturbance under several regulatory programs and likely triggers permitting by increasing the project’s footprint of disturbance. If grubbing is required for a project, the limit of grubbing shall be re-established after clearing has been completed. The area of grubbing shall be identified with flagging or construction fencing and/or erosion controls. Grubbing shall be conducted in accordance with project-specific permits.

8.4 Blasting, Noise and Vibration Control

If blasting is anticipated, the project team, including the National Grid Environmental Scientist, shall be consulted. If possible, plan work in residential areas to avoid noisy activities at night, weekends or during evenings. Emergency work in residential areas should be carried out in such a way as to keep noise to a minimum at night and weekends. Equipment should be maintained as per the manufacturer’s guidance to minimize noise and vibration.

Work plans must consider local noise ordinances and provide specific controls to ensure noise levels are maintained within specified limitations.

8.5 Site Grading


The work site shall not be graded other than in accordance with project permits. Any proposed grading shall be reviewed by the National Grid Environmental Scientist for wetlands, rare species habitat, areas of cultural and historical significance, and other environmentally sensitive areas prior to start of work. In some cases, additional testing for cultural or historical resources may be triggered by proposed grading; alternatives to grading may be sought due to protracted time frame of obtaining the permit associated with testing and performing the testing. Grading outside of a regulated area shall be kept to the minimum extent necessary for safe and efficient operations and shall comply with the project permit plans.

Grading shall be performed in a manner which does not increase the erosion potential at the Site (e.g., terraces or slope interruptions shall be utilized). Graded sites shall be promptly stabilized by applying a National Grid approved seed mix (if adequate root and seed stock are absent), and mulching with hay, straw or cellulose (use straw or cellulose hydromulch where the potential introduction of invasive plant species is of concern) to reduce erosion and visual impact, as soon as possible following completion of work at the site. Grading within a regulated area shall be subject to the review and approval of the National Grid Environmental Scientist.

In some municipalities, site grading activities require the prior approval of the Town Engineer, Building and Zoning Official, or Public Works Director. Local ordinances or bylaws should be reviewed for applicable restrictions and permitting thresholds

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8.6 Grounding Wells

The installation of grounding wells shall require erosion controls and proper soil management. Due to the typical depth required for grounding wells (typically 50 to 200 feet or more), erosion controls shall be installed around the proposed well location when working in buffer zone, in proximity to sensitive resources or near slopes. Also, dewatering basins may be required for the proper management of groundwater. The National Grid Environmental Scientist shall be consulted for the disposal of any excess soil.

8.7 Counterpoise and Cathodic Protection

The installation of counterpoise or cathodic protection shall require erosion controls and proper soil management. The National Grid Environmental Scientist shall be consulted for the disposal of any excess soil.

8.8 Work Pads

When work pads are being constructed, only clean material shall be used in their construction. Work pads shall only be constructed in areas approved by the National Grid Environmental Scientist and shown on the approved permit access plans.

8.9 Site Staging and Parking

During the project planning and permitting process, locations shall be identified for designated crew parking areas, material storage, and staging areas. Where possible, these areas should be located outside of buffer zones, watershed protection areas, and other environmentally sensitive areas. Any proposed locations shall be evaluated for all sensitive receptors and for new projects requiring permitting, shall be incorporated onto permitting and access plans.

8.10 Soil Stockpiling

Soil stockpiles shall be located in upland areas and, if in close proximity to wetlands and wetland buffers, shall be enclosed by staked straw bales or another erosion control barrier. The stockpiling of stone, drill spoils and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Additional controls, such as watertight mud boxes and geotextile/filter fabric over or between construction mats shall be considered for stockpile management. If material is placed on construction mats and falls through into wetlands, the material must be removed by hand. Saturated soils shall be allowed to dewater prior to off-site transport for sufficient time to ensure that water/sediment is not deposited onto construction mats or public roads during transport.


8.11 Top Soil/High Organic Content Soil

When the work site requires excavation and grading, the top soil shall be stockpiled separately from the material excavated. This top soil shall be spread as a top dressing over the disturbed area during restoration of the site.

In some instances where work is occurring within wetlands, high organic content soil may be displaced. Such high organic content soil shall be segregated from other excavated materials and stockpiled for

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use in wetland restoration areas. Care shall be taken to minimize the handling of high organic content soil. Preferably, the soil shall be stockpiled in one location until it is moved to the restoration area.


9.0 Stone Wall Dismantling and Re-building

Removal or alteration of stonewalls shall be avoided, whenever possible. As appropriate, some stonewalls removed or breached by construction activities shall be repaired or rebuilt. Rebuilt stone walls shall be placed on the same alignment that existed prior to temporary removal, to the extent that it shall not interfere with operations. The removal and rebuilding of stone walls requires approval from the National Grid Environmental Scientist and Property Legal, and may require several weeks lead time for coordination. Note that not all states allow this technique and that dismantling may not be allowed at all due to quality or significance of the wall. Once a stone wall has been identified as requiring dismantling, the following procedures shall be followed:

- Identify stone wall that is required to be temporarily dismantled and notify project team that a site visit is warranted to review the stone wall.
- The National Grid Environmental Scientist, with support from Property Legal and/or cultural/historical consultant, shall determine if permitting or additional permissions are required prior to dismantling stone wall.
- Once permit or permissions have been received, full documentation of wall dimensions (measurements and photographs) shall be submitted to the National Grid Environmental Scientist. Documentation of the wall dimensions shall be marked onto a copy of the applicable EFI access plan (or equivalent plan) with a useful reference for future locating such as GPS coordinates and/or measurement from a permanent reference point (closest structure location or closest cross street, etc.). The wall shall be photographed from all sides with a written description of the photograph (i.e. southern side of wall looking north). In addition, documentation of the length of wall to be dismantled shall be recorded. Take special care to note if granite property bounds (or other marker) are located within the wall so additional survey can be accomplished prior to dismantling in cases where the stone wall represents a property boundary. Site visits by project team (which shall include the National Grid Environmental Scientist) are a mandatory requirement prior to dismantling.
- No dismantling shall take place until documentation has been submitted to the National Grid Environmental Scientist and approved as sufficient documentation.
- Stones from the wall shall be removed from the work area and temporarily stored in nearby location, away from wetlands; buffer zones; rare species habitat and other historical/archeological concerns.
- Avoid dismantling via the “bulldozer” method when possible as this method makes it nearly impossible to rebuild the wall in the same alignment due to its uncontrolled nature. Dismantling shall be conducted either by hand, with stones stacked as they are removed, or on less “sensitive” walls to use an excavator with a thumb to grab each stone and build a stockpile. Significant ground disturbance below the wall shall be avoided.

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- Once construction and access in the area has been completed, the wall shall be rebuilt to pre-dismantled conditions or better. If rebuilding a stone wall can not be placed on the same alignment that existed prior to temporary removal, approval from the National Grid Environmental Scientist and Property Legal is required. **Note that if the wall represents a legal property boundary or is historically or culturally significant (or was previously determined to be in a very high quality condition), a professional stone masonry company may be required to document wall alignment, and conduct the dismantling and rebuilding.**

10.0 Avian Nest Removal

Avian nest removal shall be done in accordance with EG-304. Consult the National Grid Environmental Scientist prior to removing any nests. There are seasonal restrictions of the removal of avian nests and federal or state permits may be necessary prior to removal.


11.0 Drilling Fluids and Additives

When installing subsurface structures, there may be a need to utilize drilling aids such as slurries, borehole sealants, and other additives. All necessary steps shall be taken by National Grid personnel and contractors to prevent potential adverse effects on drinking water aquifers, groundwater quality, and wetlands when utilizing drilling aids. Efforts should be made to utilize natural bentonite clay-type materials, in place of polymer-based drilling aids. Regardless of the specific product type, the following requirements shall be met:

- Drilling aids must be NSF certified and manufactured to NSF-ANSI 60 standards. https://www.nsf.org/newsroom_pdf/NSF-ANSI_60_watemarked.pdf
- Product use must be in accordance with manufacturer's specifications and instructions.
- National Grid personnel or their contractor shall provide all the necessary information regarding the proposed product to be used to National Grid's Environmental Sustainability, Compliance and Licensing & Permitting Department as early as possible in the project planning phase. If the work is being performed by a contractor, this information must be included as part of their initial bid package.
- If polymer-based products are proposed for use, product information shall be included in all related environmental regulatory filings and frac-out plans, if possible.
- A qualified individual shall be designated who will confirm/verify and document the specific use of a drilling aid at each location. This will include add-mix ratios, surface area treated, volume of water within excavation, volumes/weight of additives used, and any other measurements specified by the manufacturer. No mixing will be allowed in the drilled shaft excavation.
- The Contractor or National Grid crew performing the work is responsible for neutralizing all drilling products, as applicable, in accordance with the manufacturer's specifications. This shall be performed following removal from the excavation and while held in holding tanks. A

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qualified person shall be designated by the Contractor who will confirm/verify and document the appropriate neutralization activity at each location, as necessary.

- Waste drilling aids (neutralized or not) or soils that may have come into contact with drilling aids will not be disposed of on National Grid properties, discharged to any ground surface or subsurface, waterbodies, wetlands or placed on 3rd party properties.
- All product use must be completed in strict adherence with the management, storage, mixing, transporting, disposing and any other requirements of state and federal regulatory approvals and permits, as applicable.
- Relevant documentation shall be maintained by the Contractor or National Grid crew performing the work, and shall include volume of material treated and disposed and the location/facility at which it was disposed.
- National Grid will not be identified as the disposal generator for any polymer based slurry waste or additives generated by Contractor activities.
- The Contractor or National Grid crew performing the work assumes full responsibility for the safe storage of all polymers and additives during use and also assumes full responsibility for improper use and application of said polymers and additives that are deemed to have contravened aquifer and/or groundwater quality.
- National Grid reserves the right to refuse and terminate the use of any specific drilling aid at any time.

Regardless of the type of drilling aid utilized, the Contractor or National Grid crew performing the work is responsible for properly treating, containerizing, testing, transporting and disposing of any/all fluids and solids generated during their activities. All wastes must be disposed of in accordance with federal and state regulations. Relevant documentation shall be maintained and shall include volume of material treated and disposed and the location/facility at which it was disposed.


12.0 Water Withdrawal for Geotechnical Investigations

The use of water during geotechnical drilling operations may be required, and is most common during the “drive and wash” drilling technique, where 4- or 6-inch diameter casing is driven into the ground, and the soil inside the casing is washed out using a pump and hollow rods. Soil samples are generally collected at periodic intervals using a split spoon sampler (e.g., every 5 vertical feet).

The National Grid Environmental Scientist and/or Project Environmental Monitor may approve withdrawals from wetlands and waterways on a case-by-case basis should the geotechnical team advise no other options are available. Generally, the amount of water required for withdrawal is between 100 and 200 gallons, and the water is then recycled continuously in the drilling process. Certain scenarios may require additional water usage if water is lost down the boring (e.g., lost due to bedrock fractures during rock coring). The following general guidance should be adhered to when determining whether water withdrawals may be allowed during geotechnical investigations on the ROW. Approval from the National Grid Environmental Scientist and/or Project Environmental Monitor is required prior to initiating water withdrawals during geotechnical investigations.

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- Withdrawals from perennial streams, ponds, lakes and large wetlands systems are preferred over small isolated wetlands to ensure the water level, water table, and hydroperiod are not affected. Prior to start of work, the Contractor shall identify which water source they prefer to withdraw from. The National Grid Environmental Scientist and/or the Project Environmental Monitor will confirm whether these sources are appropriate.
- Care should be taken to avoid alteration of wetlands or the beds and banks of surface waters. Examples of alterations include, but are not limited to, the following:
 - (a) the changing of pre-existing drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns and flood retention areas;
 - (b) the lowering of the water level or water table;
 - (c) the destruction of vegetation; and
 - (d) the changing of water temperature, biochemical oxygen demand (BOD), and other physical, biological or chemical characteristics of receiving waters.
- Wetlands and waterways providing habitat for rare species should be avoided unless all other options are exhausted. Under no circumstances should water be withdrawn from a Vernal Pool.
- Withdrawal pipes or stingers should be elevated off the bottom of wetlands and streams during the duration of pumping. Additionally, fabric or screening should be covering the withdrawal pipes to eliminate inadvertent harm to wildlife.
- Withdrawals should be performed in a manner that does not damage vegetation, disturb sediment, or result in the release of temporary or permanent fill material (e.g., sediment, spoils, or turbid water) into the wetland/waterway. Additional detail from geotechnical experts may be required to solidify BMP recommendations.
- Any water used for geotechnical drilling operations (including water withdrawn from surface water, brought on-site, or from other sources) shall be discharged into the open borehole or to an upland area such that the water infiltrates to the ground and is not discharged to a wetland or surface water resource area. Consultation with the National Grid Environmental Scientist and/or the Project Environmental Monitor is required if this is not feasible. At no time should water withdrawals result in a temporary or permanent fill/discharge of material (e.g. sediment, spoils, or turbid water) into the wetland or waterway.
- If water sourcing options is not determined prior to mobilization, necessary water shall be brought in by tank truck. Should withdrawal from surface water sources become necessary during soil boring work, the National Grid Environmental Scientist and/or the Project Environmental Monitor shall be notified prior to beginning withdrawal. If initial withdrawal from surface water is approved by the National Grid Environmental Scientist and/or the Project Environmental Monitor, the driller may withdraw from the surface water, as long as the above criteria are met.
- If excessive water withdrawal is necessary, the National Grid Environmental Scientist and/or the Project Environmental Monitor shall be consulted to determine whether the water source is appropriate for withdrawal.
- In New Hampshire, withdrawals made from state-owned property require written permission from

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the agency with primary responsibility for monitoring and/or maintaining the site.

13.0 Gates

When not in use, gates shall be locked with a company-approved lock or double locked with the property owner's lock. New gates may be installed during a project, however, installation of a gate requires permission from the property owner, and may require environmental permitting. Consult with National Grid Real Estate and the National Grid Environmental Scientist prior to installing a new gate, as well as with the appropriate engineering department for the current company gate specifications. Refer to BMPs in **Appendix 4**. Installation of ROW access restrictions (e.g., stone, bollards, other) at road crossings also require consultation with the National Grid Environmental Scientist and Property Legal.

14.0 Signage

Specific signage may be required by permits or be specified in the EFI to limit access in certain sensitive areas. Signs shall be used to clarify allowed access and sensitive areas, such as:

- "No snow stockpiling beyond this point";
- "Approved access (to structures A-F)";
- "Do not cross this area until construction mats are in place";
- "No vehicle crossing";
- "Areas to avoid"; and
- "Environmentally Sensitive Area – Keep Out."

Signs shall be used in conjunction with snow fencing or other physical barriers as demarcation for sensitive areas (e.g., rare species areas, sensitive archeological locations, etc.) that need to be protected and avoided by construction activities. In addition, permit signs required by the regulatory agencies shall be present (i.e. MADEP, RIDEM, EPA (SWPPP), ACOE, etc) at construction sites and/or ROW access points. Construction signage shall be installed and maintained by the contractor performing the work during the project. Absence of signage does not eliminate the need to comply with access plans, permit conditions, and other regulatory requirements. Refer to BMPs in **Appendix 4**.


15.0 Refueling and Maintenance Operations

15.1 Spill Prevention and Response Plan

Spill controls shall be provided on every field vehicle. Bulk storage of fuels (55 gallons or greater) shall be approved by the National Grid Environmental Scientist prior to being brought on site. The need for a field spill plan shall be evaluated specific to the project for regulatory requirements under SPCC regulations or local ordinances. A field spill plan would include information on fuels and oils being used, approximate amounts in each container or type of equipment, location, fueling location, secondary containment, response and notification procedures, including contact phone numbers, etc. All

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personnel shall be briefed on spill prevention and response prior to the commencement of construction. The state-specific EI-501 and EG-502 shall be followed in the event of a spill.

Typical construction activities do not require the use or storage of large quantities of oil or hazardous materials (i.e., greater than 55 gallons). However, oil and/or hazardous materials (OHM) may be required in limited quantities to support construction or vehicle operations. Best practices shall be followed in the use and storage of OHM which include but are not limited to: storage and refueling greater than 100 feet from resource areas; maintenance of spill response equipment at work locations sufficient to handle incidental releases from operating equipment; general training for on-site personnel for spill clean up response for incidental releases of OHM; and contracting with an on-call spill response contractor that is capable of managing incidental and significant releases of OHM. There may situations that additional precautions shall be required for the storage or use of OHM (i.e., within wellhead protection areas, GA/GAA areas, Zone IIs). Storage of OHM shall be done in accordance with any applicable regulatory requirements.

15.2 Field Refueling

Small equipment such as pumps and generators shall be placed in small swimming pools or on absorbent blankets/pads, to contain any accidental fuel spills. Small swimming pools with absorbent blankets/pads, and/or other secondary containment, shall be used for refueling of fixed equipment in wetlands and should be maintained to prevent accumulation of precipitation.

15.3 Grease, Oil, and Filter Changes

Routine vehicle maintenance shall not be conducted on project sites.

15.4 Other Field Maintenance Operations

When other vehicle or equipment maintenance operations (such as emergency repairs) occur, company personnel or contractors at field locations shall bring vehicles or equipment to an access location a minimum of 100 feet away from environmentally sensitive areas (e.g., wetlands or drinking water sources). A paved area, such as a parking lot or roadway, is a preferred field maintenance location to minimize the possibility of spills or releases to the environment.


Crews shall take all usual and reasonable environmental precautions during repair or maintenance operations. Occasionally, it is infeasible to move the affected vehicle or equipment from an environmentally sensitive area to a suitable access area. When this situation occurs, precautions shall be taken to prevent oil or hazardous material release to the environment. These precautions include (but are not limited to) deployment of portable basins or similar secondary containment devices, use of ground covers, such as plastic tarpaulins, and precautionary placement of floating booms on nearby surface water bodies.

15.5 Tools and Equipment

Cleaning of tools and equipment shall be conducted away from environmentally sensitive areas (such as wetlands, buffer zones or drinking water sources) to the maximum extent possible. A paved area such

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as a parking lot or roadway is preferred, to minimize the possibility of spill or release to the environment. Crews shall wipe up all minor drips or spills of grease and oil at field locations.

16.0 Stabilization Deadlines for Projects Subject to EPA Construction General Permit

16.1 Deadlines to Initiate Stabilization Activities (Permanent and Temporary)

Soil stabilization measures shall be implemented immediately whenever earth-disturbing activities have permanently or temporarily ceased on any portion of the project. The following are some examples of activities that constitute initiation of stabilization:

- Preparing the soil for vegetative or non-vegetative stabilization;
- Applying mulch or other non-vegetative product to the exposed area;
- Seeding or planting the exposed area;
- Finalizing the arrangements to have stabilization product fully installed in compliance with the deadlines to complete stabilization in Section 15.2 below.

16.2 Deadlines to Complete Stabilization Activities (Permanent and Temporary)

As soon as practicable, but no later than 14 calendar days or 7 calendar days (for areas discharging to a sensitive water) after the initiation of soil stabilization measures commence the following should be completed:

- For vegetative stabilization, all activities necessary to initially seed or plant the area to be stabilized; and
- For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

16.3 Vegetative Stabilization (all except for arid, semi-arid, or on agricultural lands)

- Provide established uniform vegetation (e.g., evenly distributed without large bare areas), which provides 70% or more of the density of coverage that was provided by vegetation prior to commencing earth-disturbing activities. Avoid the use of invasive species as cover.
- For final stabilization, vegetative cover must be perennial; and
- Immediately after seeding or planting a disturbed area to be vegetatively stabilized, a non-vegetative erosion control must be implemented to the area while the vegetation is becoming established. Examples include; mulch and rolled erosion control products.

16.4 Vegetative Stabilization (Agricultural Lands)


- Disturbed areas on land used for agricultural purposes that are restored to their pre-construction agricultural use are not subject to vegetative stabilization standards.

16.5 Non-Vegetative Stabilization

If using non-vegetative controls to stabilize exposed portions of your site, or if you are using such controls to temporarily protect areas that are being vegetatively stabilized, you must provide effective

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non-vegetative cover to stabilize any such exposed portions of the site. Examples of non-vegetative stabilization techniques include, but are not limited to, rip-rap, gabions, and geotextiles.

17.0 Clean-up and Restoration Standards

The following steps shall be taken once construction has been completed at each location along the ROW or within the project site. The following are minimum guidelines for clean-up and stabilization standards. Please refer to permit conditions for project-specific related standards. Refer to the EFI for applicable permit requirements and to determine if the site needs to be reviewed and approved by the permitting authorities prior to removal of erosion controls.

17.1 Removal of Sedimentation and Erosion Controls

After all work has been satisfactorily completed and vegetation has been re-established to a minimum of 75% cover, and upon approval by the National Grid Environmental Scientist, all non-biodegradable materials (e.g., siltation fencing, straw bale strings, stakes, straw wattle mesh casing, etc.) shall be disposed of properly off-site.

Dependent on permit requirements, sedimentation and erosion controls may not be allowed to be removed until after inspection and approval by one or more permitting authority. In most cases, removed straw bales may be used to mulch disturbed areas. Remaining straw bales that do not block the flow of water may be left in place unless they are required to be removed pursuant to permit conditions. Straw bales that block the flow of water shall be removed.

Prior to project construction being completed, the project team will develop post-construction inspection intervals to ensure timely removal of temporary BMPs. BMPs will be removed when the area is stabilized, which typically occurs when the area has either naturally stabilized (75% cover), or seed and mulch that was installed has achieved 75% cover.


17.2 In-Situ Restoration

Unless otherwise specified in permits or prescribed by the National Grid Environmental Scientist or the Project Environmental Consultant, all disturbed areas, including stream banks, wetlands and access routes, shall be restored following the completion of work. When the work is completed and construction mats have been removed, the National Grid Environmental Scientist or Project Environmental Consultant shall conduct an inspection. Wetlands shall be inspected for build up of sand or other materials that may have fallen through construction mats. Care shall be taken to inspect wetland crossings carefully after construction mat removal to ensure any materials are properly removed and disposed of off-site.

Restoration of Soil Compaction. If rutting or soil compaction following construction mat removal is observed, the area shall be returned to pre-existing conditions, and comparable to the surrounding area, by light hand raking or by back-blading with machinery. Restoration shall be overseen by the Project Environmental Consultant or National Grid Environmental Scientist. Deep ruts (>12") shall be filled in using available, loose soil from the work area.

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Seeding and Mulching. If adequate root and seed stock are absent and have been stripped from the area, graded sites shall be promptly stabilized by applying an approved seed mix and mulching with straw to reduce erosion and visual impact. Seeding and mulching shall be completed as soon as possible following completion of work at the site. For some wetland areas, natural re-vegetation may be more appropriate than seeding disturbed sites. Wetland areas where adequate root and seed stock are absent will be seeded using an approved wetland native seed mix. For some wetland areas, natural re-vegetation may be more appropriate than seeding disturbed sites. Refer to BMPs in **Appendix 4** for seed mix tables and mulch ratio tables.

If needed, the import of quality topsoil onto the ROW will be required. Topsoil should be tested, and approved by the Project Environmental Consultant or National Grid Environmental Scientist to determine its suitability for site conditions. Fertilizers will be approved on a case-by-case basis.

For upland areas, the disturbed vegetation and soil shall be restored and stabilized⁴ by regrading the area to pre-existing conditions, if needed, seeding (if adequate root and seed stock are absent) and mulching the exposed soil, and removing strings and stakes from straw bales and using broken up straw bales for the mulch. Siltation fencing, strings and stakes shall be removed for disposal as ordinary waste. Refer to BMPs in **Appendix 4** for seed mix tables and mulch ratio tables.

For sites with excess boulders, additional boulders could be used at proposed and existing gate locations to use on either side of the gates as a deterrent for unauthorized vehicle access or be placed along the edges of work pads where steep slopes are present for safety purposes. The final placement of boulders should be reviewed prior to installation with Real Estate and the National Grid Environmental Scientist or Project Environmental Consultant.

Unless otherwise specified in Project-specific permit conditions, the National Grid Environmental Scientist or Project Environmental Consultant shall develop an inspection frequency to monitor restored areas for stabilization, germination and successful revegetation.

17.3 Invasive Species


All equipment shall be certified clean⁵ utilizing the attached form (**Appendix 5**) or equivalent as approved by the vendor prior to mobilization to the work site. The vendor shall use the certification from provided as **Appendix 5** to document compliance with invasive species management BMPs. Clean is defined as being free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site. Any equipment that has been placed or used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project

⁴ For projects subject to the 2012 CGP, stabilization is required within 14 days, or within 7 days for sensitive areas.

⁵ The **Appendix 5** certification form (or equivalent as approved by National Grid Environmental Scientist) shall be used to document the clean certification

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site to prevent the spread of invasive species from one area to another⁶. **Equipment shall be cleaned prior to being removed at the completion of the project: exceptions to this requirement shall be determined on a case-by-case basis.** Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of equipment.

17.4 Cleaning of Equipment

At the completion of the project, equipment shall be cleaned prior to being de-mobilized to prevent tracking of material onto roads and causing safety issues. Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of equipment.

17.5 Access Roads

Constructed gravel roads shall be left in place following project completion unless permit conditions require their removal. Refer to the specific permit conditions for these provisions. If the road is to be removed, the crushed stone and geotextile fabric shall be removed from the work site. Seeding and/or mulching of gravel roads is generally not required, unless necessary to prevent erosion. Pre-existing sandy soils within mapped rare turtle habitat shall not be seeded unless directed by the National Grid Environmental Scientist so as to not alter nesting habitat.

17.6 Stone Work Pads

Unless permit conditions or property owner’s require the removal of constructed stone work pads following project completion, constructed work pads shall be left in place. Refer to the specific permit conditions for these provisions.

17.7 Construction Materials on ROWs

As soon as the structure work has been completed, all used parts and trash are to be picked up and removed from the project site. Retired poles shall be removed in accordance with National Grid Engineering Standard SP.06.01.301. In some cases, the used material from structure work may be temporarily stored at the work area by placing it out of the wetlands or other sensitive resource area until work in the adjacent areas has been completed. However, treated wood poles shall never be stored in standing water or in wetlands. If the project is cancelled, all material shall be removed from the project site. Excess material brought to the project site shall be removed upon project completion. Consult with the National Grid Environmental Scientist on whether the work site shall be restored in addition to the measures outlined above


17.8 Improved Areas

Yards, lawns, agricultural areas, and other improved areas shall be returned to a condition at least equal to that which existed at the start of the project. Off-ROW access shall never be assumed and shall be coordinated through Real Estate before being implemented. Depending on the access point, construction matting or other BMPs may be required to prevent ruts, lawn damage, or other property damage.

⁶ On ROW projects where multiple wetlands may be dominated by the same invasive species, cleaning may not be required for movement along the ROW. Check with the National Grid Environmental Scientist for guidance.

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Restoration following the completion of work and any use of improved areas shall be conducted in accordance with the measures outlined above.

17.9 Property Damage

All damage to property occurring as a result of a project shall be immediately repaired or replaced. In some locations, it may be desirable to document pre-existing damage prior to work commencing in that area in order to demonstrate afterwards that the damage did not result from the project. Work crews, the Project Environmental Consultant or the National Grid Environmental Scientist shall document repairs that were performed in response to damage from unauthorized vehicle use.

17.10 Overall Work Site

Upon satisfactory completion of work, the construction personnel shall remove all work-related trailers, buildings, rubbish, waste soil, temporary structures, and unused materials belonging to them or used under their direction during construction, or waste materials from previous construction and maintenance operations. All areas shall be left clean, without any litter or equipment (wire, pole butts, anchors, insulators, cross-arms, cardboard, coffee cups, water bottles, etc.) and restored to a stable condition and as near as possible to its original condition, where feasible. Debris and spent equipment shall be returned to the operating facility or contractor staging area for disposal or recycling (cardboard) as appropriate in accordance with EI-111.

17.11 Material Storage/Staging and Parking Areas

Upon completion of all work, all material storage yards, staging areas, and parking areas shall be completely cleared of all waste and debris. Unless otherwise directed or unless other arrangements have been made with an off ROW or off-property owner, material storage yards and staging areas shall be returned to the condition that existed prior to the installation of the material storage yard or staging area. Regardless of arrangements made with a landowner, all areas shall be restored to their pre-construction condition or better. Also any temporary structures erected by the construction personnel, including fences, shall be removed by the construction personnel and the area restored as near as possible to its original condition, including seeding and mulching as needed.

18.0 Notification of Emergency Work


Because it is sometimes difficult to identify wetlands and other sensitive environmental areas, the National Grid Environmental Scientist shall be notified within 24 hours or by the next working day whenever emergency off-road repair work takes place. Although the routine maintenance and emergency repair work is generally allowed, due to site conditions or the scope of the project, notification to the regulating agencies may be required.

19.0 Appendices

- APPENDIX 1: Glossary
- APPENDIX 2: Acronyms

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- APPENDIX 3: Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection / Monitoring Report Form
- APPENDIX 4: BMP Drawings and Guidelines
- APPENDIX 5: Certification Sheet for Invasive Species Control
- APPENDIX 6: Snow Disposal Guidelines

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Appendix 1 – Glossary

Access Road – An existing, periodically maintained road often consisting of gravel and/or exposed soils or vegetated with grasses but devoid of woody vegetation, that is visible on aerial photography and shown on ROW T-sheets. May include newly permitted permanent roads (i.e., roads to be constructed in accordance with a project-specific permit).

Access Route - A pathway previously used or proposed to be used by crews for access along the ROW. Routes may be shown on ROW T-sheets or previous project access plans but are not improved as maintained gravel/exposed soil roads. Access routes may be mown and can consist of trails utilized by recreational vehicles.

Action Logs – Project-specific log used to document action items required for permit compliance. The log identifies timeframes for completion and responsible parties. The log is typically updated by the Project Environmental Consultant or the National Grid Environment Scientist and circulated to the project team on a weekly, or more frequent, basis.

Bank – The transitional slope immediately adjacent to the edge of a surface water body, the upper limit of which is usually defined by a break in slope, or, for a wetland, where a line delineated in accordance with applicable state and federal regulations that indicates a change from wetland to upland.

BMP – Best Management Practice. Individual engineered constructions or operating procedures intended to minimize and mitigate soil disturbance, erosion, sedimentation, turbid discharges, and/or impacts to sensitive receptors.

Clean - Free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site.

Clean Gravel – Gravel is a type of coarse-grained soil that consists of small stones and other mineral particles. Clean Gravel shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001) Clean Gravel will not have fine materials that could lead to a turbid discharge.


Clean Stone (Crushed Stone) – Clean Stone (Crushed Stone) shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001). Clean Stone will not have fine materials that could lead to a turbid discharge.

Clearing – The cutting of trees and large bushes by hand and/or mechanical means.

Compost Socks – Tubular devices comprised of non-degradable, photodegradable, or biodegradable mesh tubing containing organic compost matrix. Compost socks are effective for intercepting site runoff, trapping

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sediment, and treating for soluble pollutants by filtering stormwater runoff. . Compost socks are a useful sedimentation control device along construction site perimeters, as check dams in drainage channels, as a slope interruption practice on long and/or steep slopes, and around drain or street curb inlets.

Construction Mats - Construction, swamp, and timber mats (“construction mats”) are generic terms used to describe structures that distribute equipment weight to minimize disturbance to wetland soil and vegetation while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes.

Corduroy Road – Corduroy roads are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another.

Dewatering Basin – An established containment area for saturated materials and pumped discharges. This measure is used for the purpose of de-watering soils prior to transport off site or for use in another location on site, and for allowing suspended sediment to settle out of pumped discharges.

Detention/Retention Basin – A detention/retention basin is designed for the purpose of detaining or retaining water. A dewatering basin is a form of detention basin

Dewatering – Use of a system of pumps, pipes and temporary holding dams to drain or divert waterways or wetlands, or lower the groundwater table before and during excavation activities.

Drainage Ditch or Swale – A clearly noticeable channel that is typically dry, except after precipitation events. Intermittent and perennial streams and rivers are not included in this definition.

Dredge – To dig, excavate, or otherwise disturb the contour or integrity of sediments in the bank or bed of a wetland, a surface water body, or other area within the regulating bodies’ jurisdiction.

Dredge Spoils – Material removed as the result of dredging.


Embankment – A protective bank constructed of mounded earth or fill materials located between a roadway (or rail bed) and a seasonal stream or other wetland.

Environmental Field Issue – Document that contains copies of all project-specific environmental permits and summarizes all environmental permit conditions. The EFI is prepared by the Project Environmental Consultant or the National Grid Environment Scientist and copies are provided to the Project Manager, Construction Supervisor(s), and other team members as appropriate.

Environmental Monitoring Records – Examples of checklists and/or monitoring reports suggested for use by the Company Environmental Engineer to document conformance of the project with this Environmental Guidance and or project specific permit/license conditions.

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Environmental Scientist – Formerly Environmental Engineer. The National Grid Environmental Department representative for the project or the territory where the work is located. For a map of Environmental Department staff territories, refer to the Environmental page of the National Grid infonet.

Environmentally Sensitive Areas – Examples of environmentally sensitive areas that may be found on National Grid properties are rivers, streams, ponds, lakes, wetlands, bogs, swamps, salt marshes, rare species habitat, wellhead protection areas, cultural sites, parks, preserves, schools and as otherwise defined by Federal, State or local regulations. Refer to EG-301.

Erosion Controls – The utilization of methods to prevent soil detachment and minimize displacement or washing down slopes by rainfall or run-off. Common practices include, but are not limited to:

- (a) Temporary and Permanent Seeding.
- (b) Mulching, Soil Binders, Tackifiers.
- (c) Erosion Control Blankets.
- (d) Hydraulic Erosion Control.

Excavate/Excavation – To dig, remove, or form a cavity or a hole in an area within the department’s jurisdiction.

Fill (n.) – Any rock, soil, gravel, sand or other such material that has been deposited or caused to be deposited by human activity.

Fill (v.) – To place or deposit materials in or on a wetland, surface water body, bank or otherwise in or on an area within the jurisdiction of the department.

Flats – Relatively level landforms composed of unconsolidated mineral and organic sediments usually mud or sand, that are alternately flooded and exposed by the tides and that usually are continuous with the shore.

Frozen Condition – Field conditions when the upper portion of the ground surface freezes or when areas of standing water freeze solid such that vehicle passage over these areas is supported without any resulting soil disturbance. The frozen conditions must have been affected by severe cold (maximum daily temperatures less than 32 degrees F) for a continuous 2-week period.


GAA – Rhode Island groundwater classification, groundwater resources that are known, or presumed to be suitable for drinking water use without treatment, and are located in one of the three areas described below.

a) The state’s major stratified drift aquifers that are capable of serving as a significant source for a public water supply (“groundwater reservoirs”) and the critical portion of their recharge area as delineated by DEM;

b) The wellhead protection area for each public water system community water supply well. Community water supply wells are those that serve resident populations and have at least 15 service

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connections or serve at least 25 individuals, e. g. municipal wells and wells serving nursing homes, condominiums, mobile home parks, etc.; and

c) Groundwater dependent areas that are physically isolated from reasonable alternative water supplies and where existing groundwater warrants the highest level of protection. At present only Block Island has been designated as meeting this criterion.

GA – Rhode Island groundwater classification, groundwater resources that are known, or presumed to be suitable for drinking water use without treatment. However, groundwater classified by GA does not fall within any of the three priority areas described under the GAA classification.

Grade/Grading – The movement of soil and fill material to change the elevation of the land. The term refers to the combined actions of excavating and filling to change elevation or shape.

Grubbing – The removal of stumps/roots by mechanical means during site preparation activities.

Immediately - As soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

In-kind Replacement - Replacement using the same material, functional inverts, diameter and length as the existing item. In-kind replacement includes the substitution of a structure with a similar structure in approximately the same location as is practicable, and is approximately the same in design. The design may be altered to meet applicable utility standards, and may include alternate materials designed to prolong the life of that service.

Intermittent Stream – A stream that flows for sufficient time to develop and maintain a defined channel, but which might not flow during dry portions of the year.


In the Dry – Work done either during periods of low water or behind temporary diversions, such as Earth Dike / Drainage Swale and Lined Ditches designed and installed in accordance with best management practices.

Limit of Work/Disturbance – The approved project limits within regulated areas. All project related activities in regulated areas must be conducted within the approved limit of work/disturbance. The limit of work/disturbance shall be depicted on the approved permit site plans and in the EFI plans. Where it is warranted National Grid may require that these limits be identified in the field by flagging, construction fencing, and/or perimeter erosion controls.

Long-Term Restoration Logs - Project-specific log used to document restoration required following the completion of construction or as areas of the project have been completed (i.e., segments of ROW for a multi-mile project). The log is typically updated by the Project Environmental Consultant or the National Grid Environment Scientist and circulated to the project team on a weekly basis.

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Low Flow Conditions – Low water flow that generally occurs during the summer, as a result of decreased precipitation and the removal of water by increased evaporation and evapotranspiration by vegetation. Work done under low-flow conditions minimizes the potential for environmental damage. The USACE defines the calendar dates for low flow conditions in its New England state-specific Programmatic General Permits.

Low Ground Pressure – Equipment that meets the USACE GP state-specific defined Pounds per Square Inch (PSI) ground pressure when loaded. Use of LGP equipment **requires approval** from the National Grid Environmental Scientist.

Marsh – A wetland:

- a) That is distinguished by the absence of trees and shrubs;
- b) Dominated by soft-stemmed herbaceous plants such as grasses, reeds, and sedges; and
- c) Where the water table is at or above the surface throughout the year, but can fluctuate seasonally.

Methods – Are the construction practices and procedures that take place through choosing the proper equipment, trucks and labor to execute the earth moving activities based on the existing conditions and implementing creative and sensitive scheduling for the daily activities.

NHESP - Natural Heritage Endangered Species Program; a department within the Massachusetts Division of Fisheries and Wildlife that is responsible for protecting the 176 species of vertebrate and invertebrate animals and 259 species of native plants that are officially listed as Endangered, Threatened or of Special Concern in Massachusetts.

Perennial – A stream that contains water at all times except during extreme drought.

Permanently Ceased – Is applicable to earth disturbance activities when clearing and excavation within any area of the Project that will not include permanent structures has been completed.


Person-in-Charge – A National Grid Project Engineer, Manager, Supervisor, Field Construction Coordinator or equivalent Contractor personnel assigned to oversee and coordinate work activities.

Processed Gravel – Processed Gravel shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001). Processed Gravel will not have fine materials that could lead to a turbid discharge. Gravel consisting of inert material that is hard, durable stone and is free from loam and clay, surface coatings and deleterious materials.

Regulating Body – Federal, State, or local authority that has jurisdiction over resource areas that may be impacted by company operations

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Regulated Wetland Area – Those areas that are subject to federal, state or local wetland regulation, including certain buffer or adjacent areas.

Repair – The restoring of an existing legal structure by partial replacement of work, or broken, or unsound parts (Env-Wt 101.73).

Replacement – The substitution of a new structure for an existing legal structure with no change in size, dimensions, location, configuration, construction, or which conforms in all material aspects to the original structure

Right-of-Way – A corridor of land where National Grid has legal rights (either fee ownership, lease or easement) to construct, operate, and maintain an electric power line and/or natural gas pipeline and may include work on customer owned properties.

River – A watercourse that is larger than a perennial stream and flows all year long.

Routine Utility Rights-of-Way Maintenance Activity – Includes but is not limited to vegetation management and repair or replacement of existing utility structures.

Sedimentation Controls – Silt fences, straw bales, compost socks/berms and other barrier devices strategically placed to intercept and treat sediment-laden site runoff.

Sensitive Water - Includes any sediment or nutrient impaired water or a water that is identified by the state, tribe or EPA as Tier 2, 2.5 or Tier 3 for antidegradation purposes.

Siltation Curtain – An impervious barrier erected to prevent silt and sand and/or fines from being washed into a wetland, surface water body or other area of concern.


Surface Water Body or Surface Waters – Those portions of waters which have standing or flowing water at or on the surface of the ground.

Spill Prevention, Control and Countermeasure Plans – Required for site operations that involve the storage of 1,320 gallons or greater of fuel and oils, both in storage containers and stored in equipment. Response actions to spills and releases are specified in these plans.

Stormwater Pollution Prevention Plan – A site-specific, written document that, among other things: (1) identifies potential sources of stormwater pollution at a construction site; (2) describes stormwater control measures to reduce or eliminate pollutants in stormwater discharge from a construction site; and (3) identifies procedures the operator will implement to comply with the terms and conditions of EPA NPDES Construction General Permit (CGP). SWPPPs must be prepared, maintained on-site, and amended as necessary in order to obtain NPDES permit coverage for specific construction site stormwater discharges under the EPA NPDES CGP.

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Temporarily Ceased - Is applicable when there are earth disturbance activities such as clearing, grading, and/or excavation that are not complete, but will be idle in one area for a period of up to 14 or more calendar days, and which will resume in the future. The 14 calendar day timeframe begins as soon as you now that construction work on a portion of the Project will be left incomplete and idle. In circumstances where there are unanticipated delays and you do not know at first how long the work stoppage will continue, the requirement to immediately initiate stabilization is triggered as soon as you know with reasonable certainty that work will be stopped for 14 or more additional calendar days.

Tidal Wetlands – A wetland whose vegetation, hydrology or soils are influenced by periodic inundation or tidal waters.

Topsoil – The uppermost part of the soil, ordinarily moved in tillage, or its equivalent in uncultivated soils and ranging in depth from 2 to 10 inches.

Turbidity – The condition in which solid particles suspended in water make the water cloudy or even opaque in extreme cases.

United States Geological Survey Topographic Map – A map that uses contour lines to represent the three-dimensional features of a landscape on a two-dimensional surface. These maps use a line and symbol representation of natural and artificially created features in an area.

Wetland – An area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation (more than 50 percent) typically adapted for life in saturated soil conditions (hydric soils). Wetlands include but are not limited to swamps, marshes, bogs, and similar areas.


Work Site – An area where work is performed.

Worker – Company employee, contractor, consultant working on site.

Zone II - Massachusetts - That area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at safe yield, with no recharge from precipitation). It is bounded by the groundwater divides which result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone IIs shall extend up gradient to its point of intersection with prevailing hydrogeologic boundaries (a groundwater flow divide, a contact with till or bedrock , or a recharge boundary).

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Appendix 2 – Acronyms


ASTM	American Society for Testing and Materials
BMP	Best Management Practices
EFI	Environmental Field Issue
EG	Environmental Guidance
EPA	Environmental Protection Agency
GA/GAA	Rhode Island Groundwater Classifications – see glossary
LGP	Low Ground Pressure
MA	Massachusetts
MA DEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
NE	New England
NH	New Hampshire
NH DES	New Hampshire Department of Environmental Services
NHESP	Natural Heritage Endangered Species Program
NPDES	National Pollutant Discharge Elimination System
OHM	Oil and/or Hazardous Materials
PSI	Pounds per square inch
RI	Rhode Island
RI DEM	Rhode Island Department of Environmental Management
RI CRMC	Rhode Island Coastal Resources Management Council
RI SESC	Rhode Island soil erosion and sediment control
ROW	Right-of-Way
RTE	Rare, Threatened or Endangered
SPCC	Spill Prevention, Control and Countermeasure
SWPPP	Storm Water Pollution Prevention Plan
TOY	Time-of-Year
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
VT	Vermont

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VT DEC Vermont Department of Environmental Conservation
 Zone II Massachusetts Groundwater Protection district – see glossary


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Appendix 3

See EG303NE_Appendix3_Reporting Form published separately

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Appendix 4 – BMPs

See EG303NE_Form1 for a list of BMPS

See EG303NE_Form2 for BMP details

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APPENDIX 5
CERTIFICATION FORM FOR INVASIVE SPECIES CONTROL

Certain permit conditions, therefore a Condition of Contracts for the Prime Contractor, any Subcontractors, and any equipment or mat vendors for **National Grid Projects** shall be required to Certify their equipment⁷ {each piece of equipment used on site} as 'clean'⁸.


_____ (name of firm) hereby Certifies that
 _____ (make, model, and/or type)
 _____ (equipment ID tag or #) meets the following

1. before entry on to the job site, has been sufficiently cleaned to remove all accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species; and
2. that the above piece of equipment has neither been off-loaded nor operated in the interval between cleaning and delivery to the jobsite.
3. that equipment deployed in areas of invasive species (as identified in project plans) shall be cleaned prior to redeployment.

_____ (signed) _____ (dated)
 _____ (printed name) _____ (title)
 _____ (Firm)

The signed original of this form {one for each piece of equipment (or lot⁹ of mats)} is to be given to the NG Construction Supervisor assigned to the project.

⁷ Equipment may include, but is not limited to bulldozers, excavators, backhoes, bucket trucks (tracked or wheeled), pulling equipment, concrete trucks, compressors, drilling equipment, and mats (composite, wood, or other materials).
⁸ With regard to invasive species, the definition of clean means free of accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species.
⁹ Lot of mats is the number of mats that may be transported by one forwarder/truck at a time.


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Appendix 6 – Snow Disposal Guidelines

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	BMP #	Measure
Sediment & Erosion Controls	SEC-1	Weed free bale barrier
	SEC-2	Sediment control fence
	SEC-3	Silt fence / weed free barrier
	SEC-4	Silt Soxx
	SEC-5	Straw Wattle
	SEC-6	Erosion Control Blanket - Ditch
	SEC-7	Erosion Control Blanket - Slope
	SEC-8	Hydroseeding with Tackifier (slope stabilization)
	SEC-9	Mulch materials, rates and uses (from NY)
	SEC-10	Seeding options - Upland Seed Mixes
	SEC-11	Seeding options - Wetland Seed Mix
	SEC-12	Distribution Pole Erosion Control

Crossing Measures	CM-1	Prefabricated mats
	CM-2	Construction mat bridge
	CM-3	Construction mat layout (with transition)
	CM-4	Construction mat layout (with transition & BMPs)
	CM-5	Construction mat - Air Bridge
	CM-6	Corduroy road
	CM-7	Rock Ford
	CM-8	Temporary construction entrance / exit
	CM-9	Temporary construction culvert
	CM-10	Access way stabilization
	CM-11	Construction signage
	CM-12	Construction Mat Anchoring

Advanced Applications	AA-1	Reinforced silt fence
	AA-2	Sediment filter
	AA-3	Stone check dams
	AA-4	Straw / haybale check dam
	AA-5	Waterbar
	AA-6	Sandbag check dam
	AA-7	Earth dike
	AA-8	Drainage swale and lined ditch
	AA-9	Sedimentation basin
	AA-10	Dewatering basin - Small scale
	AA-11	Dewatering basin - Large scale
	AA-12	Dirtbag
	AA-13	Concrete waste sump

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Advanced Applications	AA-14	Outpak concrete washout
	AA-15	Barrier fence (construction fence)
	AA-16	ROW gates / fences
	AA-17	Bollard
	AA-18	Dust control
	AA-19	Catch Basin Inlet Protection
	AA-20	Silt Sack
	AA-21	Turbidity Curtain
	AA-22	Siltsoxx Amphibian & Reptile Crossing #1
	AA-23	Siltsoxx Amphibian & Reptile Crossing #2
	AA-24	Siltsoxx Amphibian & Reptile Crossing #3
	AA-25	Cultural Avoidance

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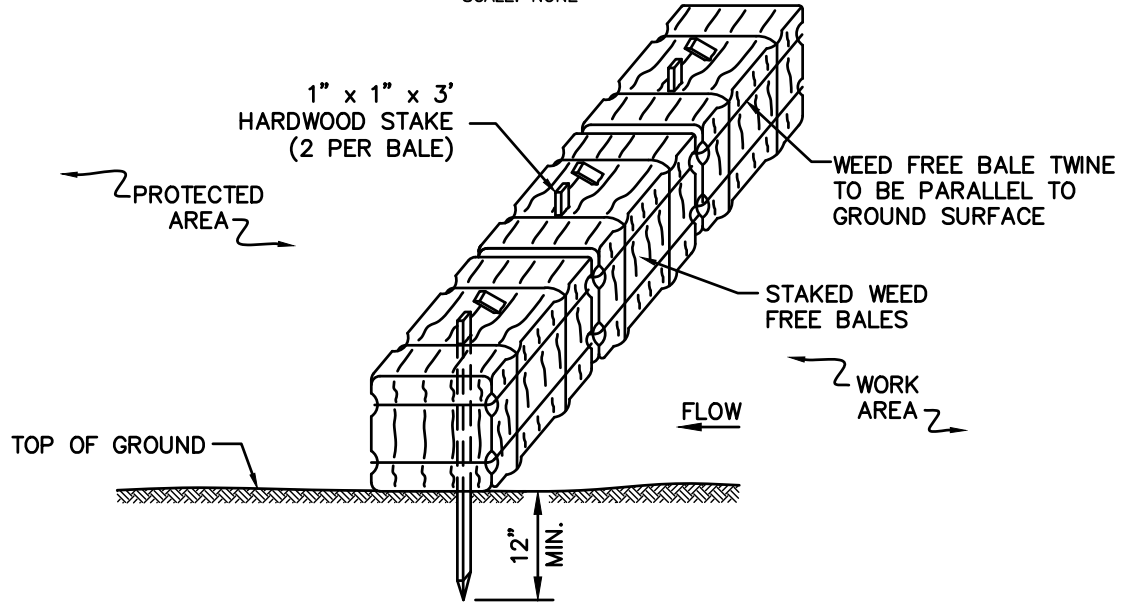
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SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES:

1. THE GROUND SHALL BE PREPARED TO PROVIDE COMPLETE CONTACT WITH THE BALES.

BMP PICTURE



File: BALE_BARRIER.DWG

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SEC-1
WEED FREE BALE BARRIER

SUBJECT

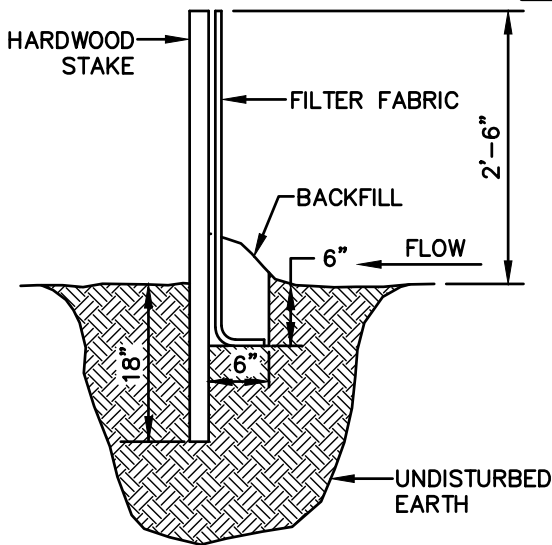
Access, Maintenance and Construction
Best Management Practices

Reference

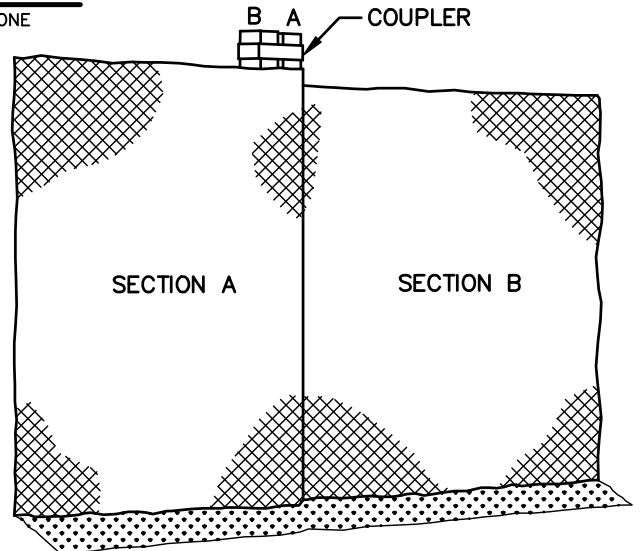
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

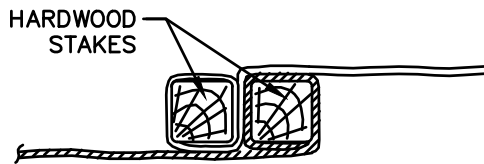
SCALE: NONE



PROFILE



SECTION



PLAN

BMP PICTURE



File: Sediment_Fence.dwg

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SEC-2
SEDIMENT CONTROL FENCE

SUBJECT

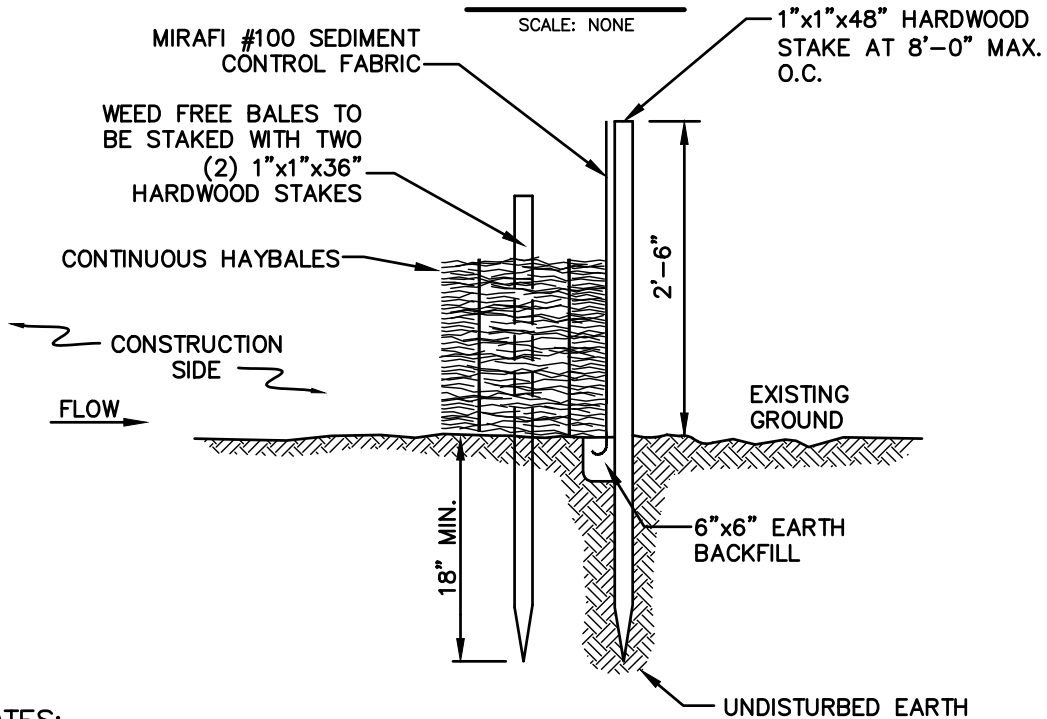
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES:

1. BALES SHALL BE PLACED IN A ROW WITH THE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. BALES SHALL BE SECURELY ANCHORED IN PLACE BY TWO (2) 1"x1"x36" HARDWOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
3. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
4. BALES SHALL BE REMOVED AND REPLACED WHEN THEY BECOME FILLED WITH SEDIMENT AND BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
5. BALES SHALL BE REMOVED WHEN THE EMBANKMENTS STABILIZE.
6. BALES TO BE TWINE BOUND.

BMP PICTURE



File: Silt_Fence_&_Barrier.dwg

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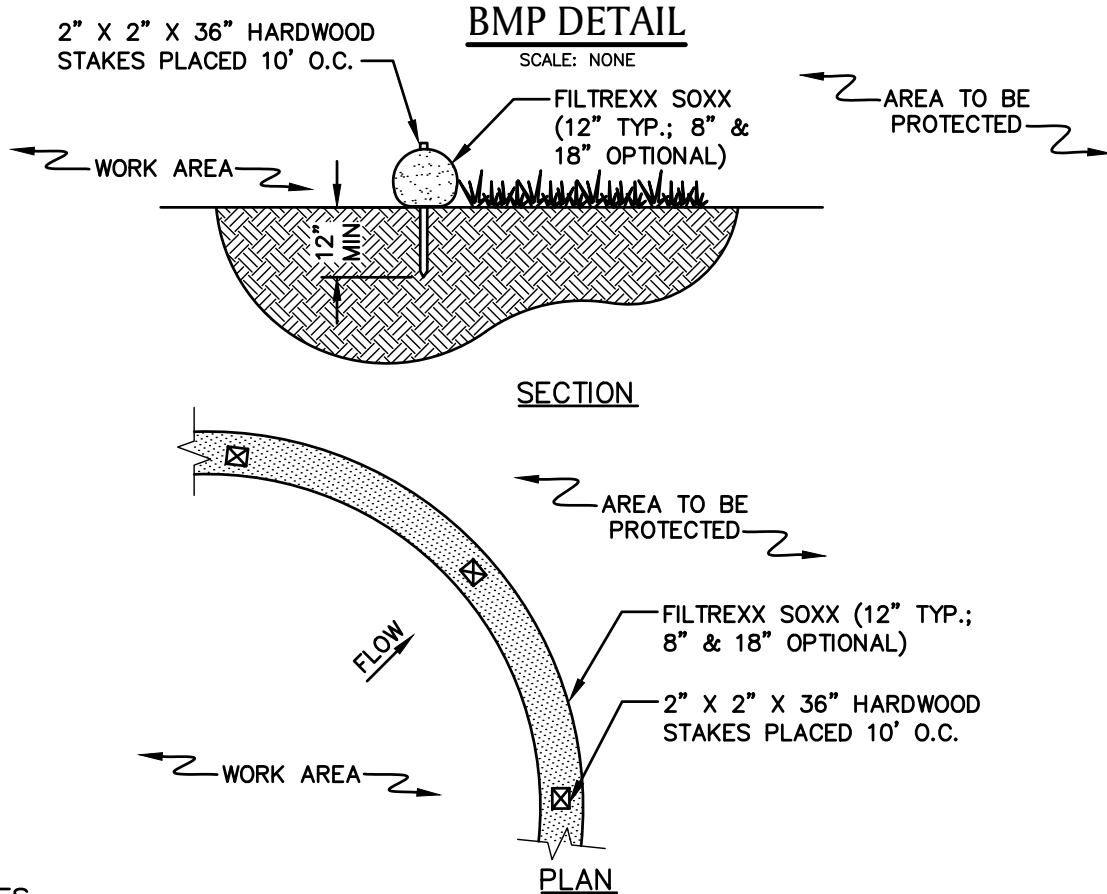
SEC-3
SILT FENCE /
WEED FREE BARRIER

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)



NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. MESH CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" - 3/8".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



* PICTURE AND DETAIL PROVIDED BY FILTREXX LAND IMPROVEMENT SYSTEMS
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SEC-4
SILT SOXX *

SUBJECT

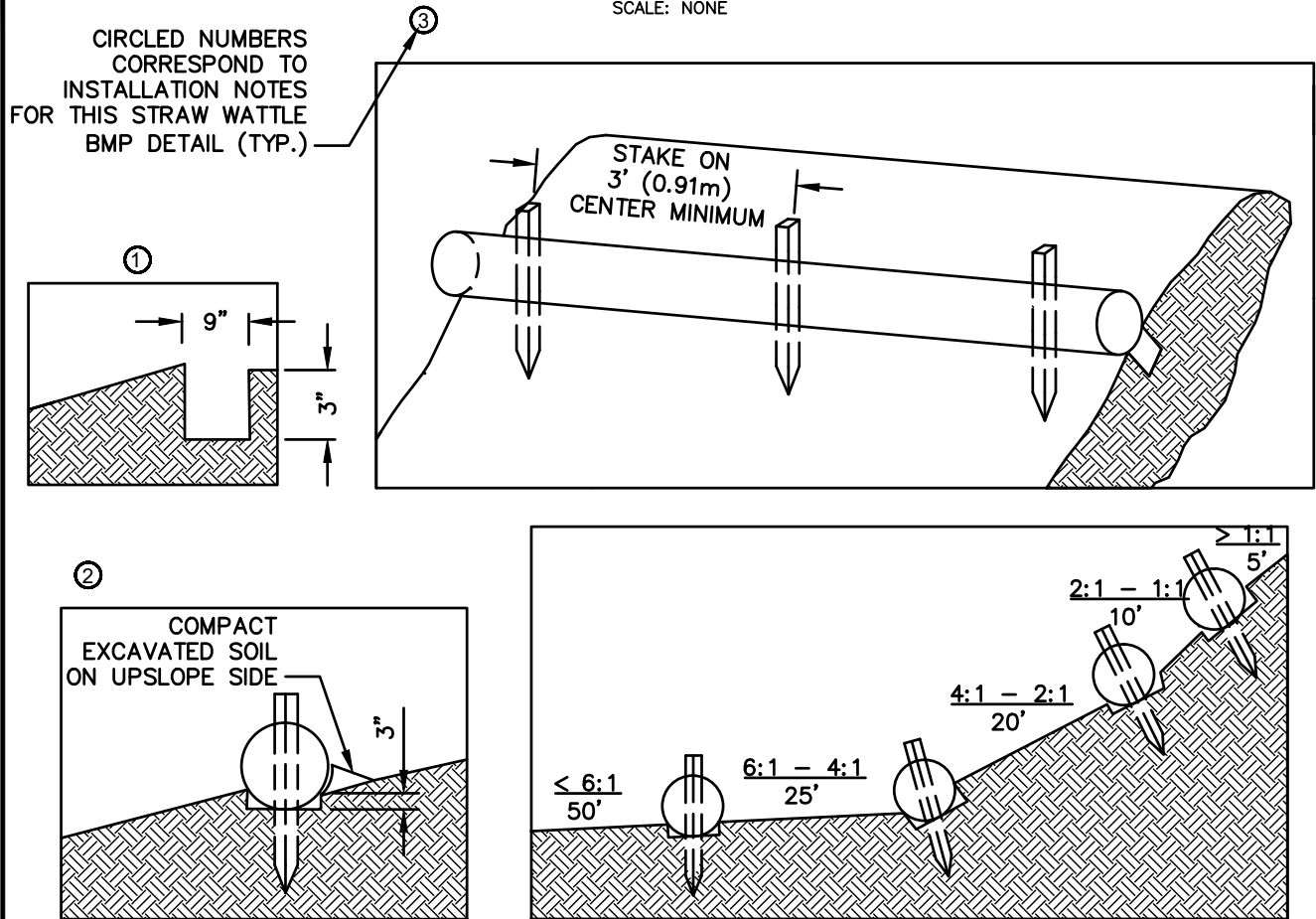
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES:

1. PRODUCT TO BE TENSAR NORTH AMERICAN GREEN STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. TYPICAL WATTLE SPACING BASED ON SLOPE GRADIENT. COORDINATE SPACING AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
3. MINIMUM 12" DIAMETER WATTLES SHOULD BE USED FOR HIGHLY DISTURBED AREAS (I.E., HEAVILY USED ACCESS ROAD WITH ADJACENT WETLAND) AND MINIMUM 9-10" WATTLES SHOULD BE USED FOR LESS DISTURBED SOILS.

INSTALLATION NOTES:

1. BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2-3" DEEP X 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UPSLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. ADJACENT WATTLES SHOULD TIGHTLY ABUT.
3. SECURE THE WATTLE WITH 18-24" HARDWOOD STAKES EVERY 3-4' AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLE LEAVING AT LEAST 2-3" OF STAKE EXTENDING ABOVE THE WATTLE. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

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SEC-5
STRAW WATTLE * (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



**STRAW WATTLE – SHALLOW SLOPE ($\leq 4:1$)
(ALTERNATE STAKING)**

ALTERNATE STAKING INSTALLATION NOTES:

1. ON SHALLOW SLOPES ($\leq 4:1$), STRAW WATTLE MAY BE SECURED WITH 18–24” HARDWOOD STAKES DRIVEN AGAINST THE SIDES OF THE WATTLE INSTEAD OF THROUGH. STAKES SHALL ALTERNATE SIDES, AND BE SPACED 3–4’ MAX.
2. TWINE SHALL BE TIED FROM STAKE TO STAKE, CRISS–CROSSING THE STRAW WATTLE. TIE TWINE TO STAKES BELOW THE HEIGHT OF THE WATTLE.

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**SEC-5
STRAW WATTLE * (2 OF 2)**

SUBJECT

Access, Maintenance and Construction
Best Management Practices

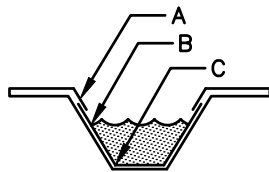
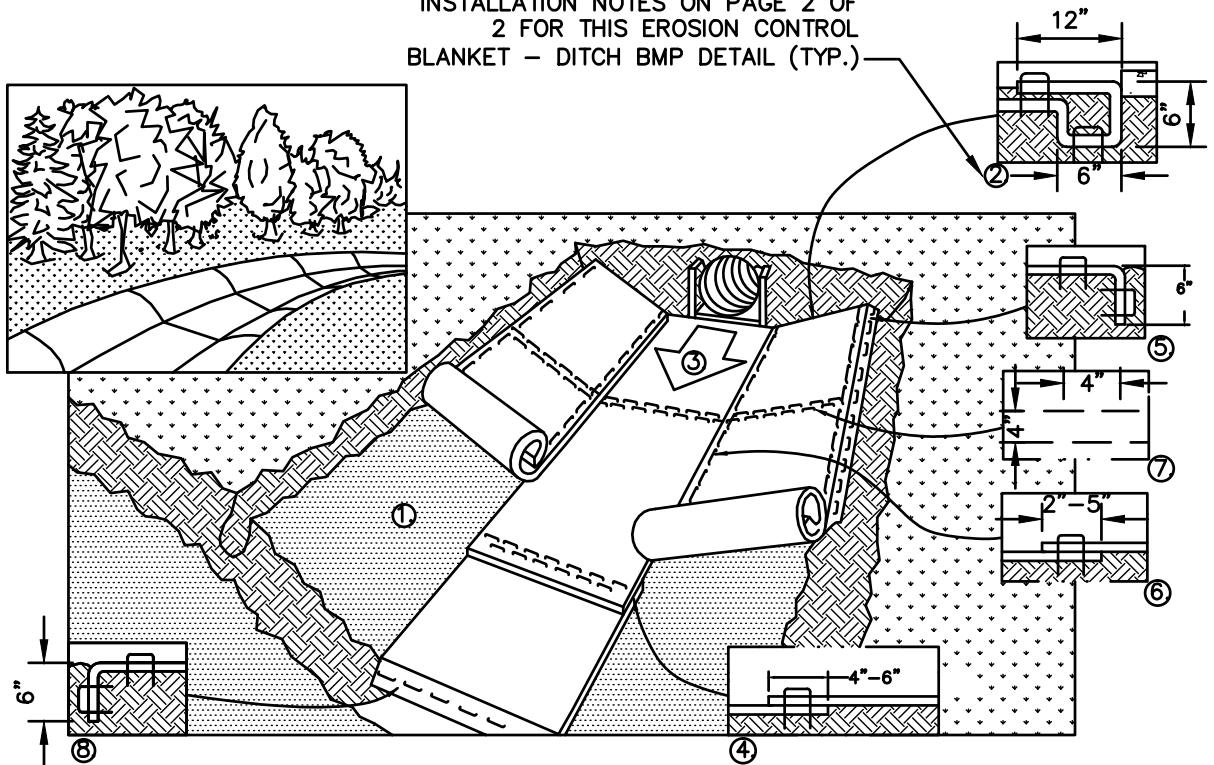
Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

CIRCLED NUMBERS CORRESPOND TO
INSTALLATION NOTES ON PAGE 2 OF
2 FOR THIS EROSION CONTROL
BLANKET - DITCH BMP DETAIL (TYP.)



CRITICAL POINTS

- A. OVERLAPS AND SEAMS
- B. PROJECTED WATER LINE
- C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTES:

1. PRODUCT TO BE NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.
3. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY ANCHOR THE ROLLED EROSION CONTROL PRODUCTS (RECP's).

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SEC-6
EROSION CONTROL BLANKET -
DITCH * (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

INSTALLATION NOTES:

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" - 6" (10 CM -15 CM) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" - 5" (5 CM -12.5 CM) (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9 M - 12 M) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

BMP PICTURE



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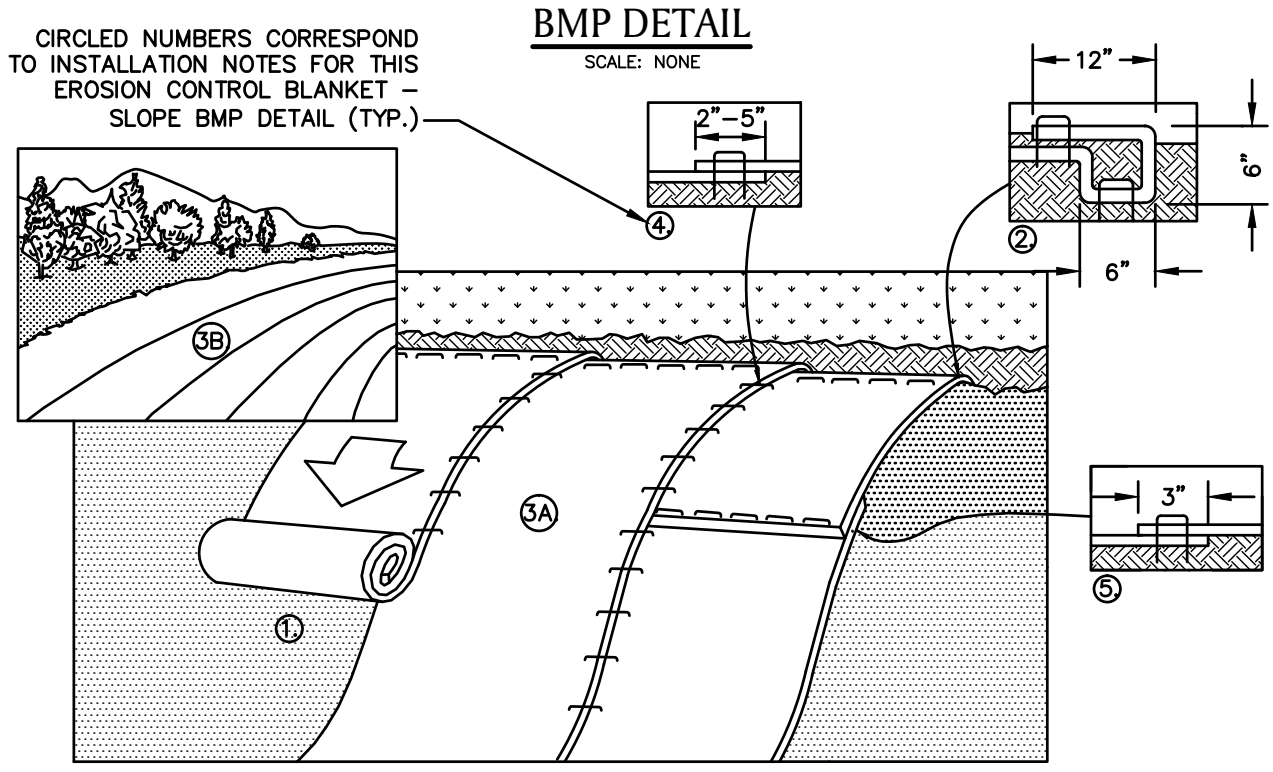
SEC-6
EROSION CONTROL BLANKET -
DITCH * (2 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)



NOTES:

1. PRODUCT TO BE NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLES OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

INSTALLATION NOTES:

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.

File: Erosion_Blanket_Slope.dwg

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SEC-7
EROSION CONTROL BLANKET -
SLOPE * (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



File: Erosion_Blanket_Slope.dwg

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SEC-7
EROSION CONTROL BLANKET -
SLOPE * (2 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



NOTES:

1. COORDINATE MIXTURE TYPE AND APPLICATION AREAS WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.
2. A MINIMUM OF 1500 LBS. PER ACRE OF A PAPER/CORN FIBER OR EQUIVALENT WITH NATURAL TACKIFIERS WILL BE USED ON SLOPES LESS THAN 3:1.
3. A BFM (BONDED FIBER MATRIX) WILL BE USED ON SLOPES GREATER THAN 2:1.
4. A FGM (FLEXIBLE GROWTH MATRIX) OR ESM (EXTREME SLOPE MATRIX) WILL BE USED ON SLOPES GREATER THAN 1:1.
5. REFER TO BMP #10 FOR SEED MIXTURE OPTIONS.

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* TACKIFIER INFORMATION PROVIDED BY FILTREXX LAND IMPROVEMENT SYSTEMS AND TENSAR NORTH AMERICAN GREEN

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SEC-8
HYDROSEEDING WITH TACKIFIER
(SLOPE STABILIZATION) *

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP

Definition

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface.

Purpose

The primary purpose is to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch is also used alone for temporary stabilization in non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.



NOTE:

1. PICTURE DEPICTS STRAW MULCH APPLICATION (FROM MULCH SPREADER) ON STEEP SLOPE WITH AN IMPROVED DRAINAGE SWALE.
2. COORDINATE MULCH MATERIALS AND RATES WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

* BMP INFORMATION FROM "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (AUGUST, 2005)." INFORMATION OBTAINED VIA WEBSITE: <http://www.dec.ny.gov/chemical/29086.html>
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SEC-9
MULCH MATERIALS, RATES AND USES (FROM NY) *

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

UPLAND ROW RESTORATION MIX – GENERAL

Species Composition Options:

- Andropogon gerardii; Niagra Big Bluestem
- Schizachyrium scoparium; Little Bluestem
- Elymus Canadensis; Canada Wild Rye
- Elymus virginicus; Virginia Wildrye
- Lolium multiflorum; Annual Ryegrass
- Sorghastrum nutans; Indiangrass
- Chamaecrista fasciculata; Partridge Pea
- Desmodium canadense; Showy Tick Trefoil
- Heliopsis helianthoides; Ox–Eye Sunflower
- Panicum virgatum; Switchgrass
- Rudbeckia hirta; Black Eyed Susan
- Poa palustris; Fowl Bluegrass
- Agrostis perennans; Upland Bentgrass
- Agrostis alba; Redtop
- Festuca rubra; Red Fescue
- Lotus corniculatus; Birds–Foot Trefoil
- Chrysanthemum leucanthem; Ox–Eye Daisy
- Aster novae–angliae; New England Aster

Example Seed Mixes:

1. Native Upland wildlife forage and Cover Meadow Mix – Ernst Conservation Seeds (ERNMX–123)
2. Eastern Ecotype Native Grass Mix– Ernst Conservation Seeds (ERNMX–177)
3. New England Native Warm Season Grass Mix – New England Wetland Plants, Inc.
4. New England Logging Road Mix – New England Wetland Plants, Inc.
5. Northeast Upland Wildflower/Restoration Erosion Mix – Southern Tier Consulting (STCMX–2)

UPLAND ROW RESTORATION MIX – DRY/ROCKY SITES

Species Composition Options:

- Festuca rubra; Red Fescue
- Schizachyrium scoparium; Little Bluestem
- Elymus Canadensis; Canada Wild Rye
- Bouteloua gracillis; Blue Grama
- Lolium multiflorum; Annual Ryegrass
- Lolium perenne; Perennial Ryegrass
- Agrostis scabra; Rough Bentgrass
- Agrostis perennans; Upland Bentgrass
- Sorghastrum nutans; Indiangrass

Example Seed Mixes:

1. New England Erosion Control/ Restoration Mix for Dry Sites – New England Wetland Plants, Inc.
2. Ernst Conservation Seeds and similar companies can create a custom seed mix matching the composition above (with site specific additions if necessary).

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

WETLAND ROW RESTORATION MIX

Species Composition Options:

- Agrostis stolonifera; Creeping Bentgrass
- Poa trivialis; Rough Bluegrass
- Alopecurus arundinaceus; Creeping Meadow Foxtail
- Lolium multiflorum; Annual Ryegrass
- Festuca rubra; Creeping Red Fescue
- Elymus virginicus; Virginia Wildrye
- Schizachyrium scoparium; Little Bluestem
- Andropogon gerardii; Niagra Big Bluestem
- Carex vulpinoidea; Fox sedge
- Panicum virgatum; Switchgrass
- Agrostis scabra; Rough Bentgrass
- Aster novae-angliae; New England Aster
- Eupatorium perfoliatum; Boneset
- Euthamia graminifolia; Grass Leaved Goldenrod
- Scirpus atrovirens; Green Bulrush
- Verbena hastata; Blue Vervain
- Juncus effusus; Soft Rush
- Scirpus cyperinus; Wool Grass
- Panicum clandestinum; Deertongue

Example Seed Mixes

1. New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites – New England Wetland Plants, Inc.
2. Northeast Wetland Grass Seed Mix – Southern Tier Consulting (STCMX-7)
3. Ernst Conservation Seeds and similar companies can create a custom seed mix matching the composition above (with site specific additions if necessary).

GERNERAL NOTES:

1. Seed mixes described herein are intended to cover a variety of typical new england landscapes. However, site specific seed mixes will need to be evaluated in coastal or mountainous regions.
2. Seed mixes described herein are intended for general ROW restoration. Site specific wetland seed mixes may be required by local, state and/or federal regulators for certain impacts to wetlands.
3. All seed mixes are to be approved by National Grid Environmental Scientist prior to construction and must conform with all project permits.
4. Seedbed preparation and maintenance as well as temporary erosion and sediment controls are crucial to the establishment of newly seeded areas. Coordinate with National Grid Environmental Scientist on seed bed preparation and maintenance as well as temporary erosion and sediment controls prior to construction.

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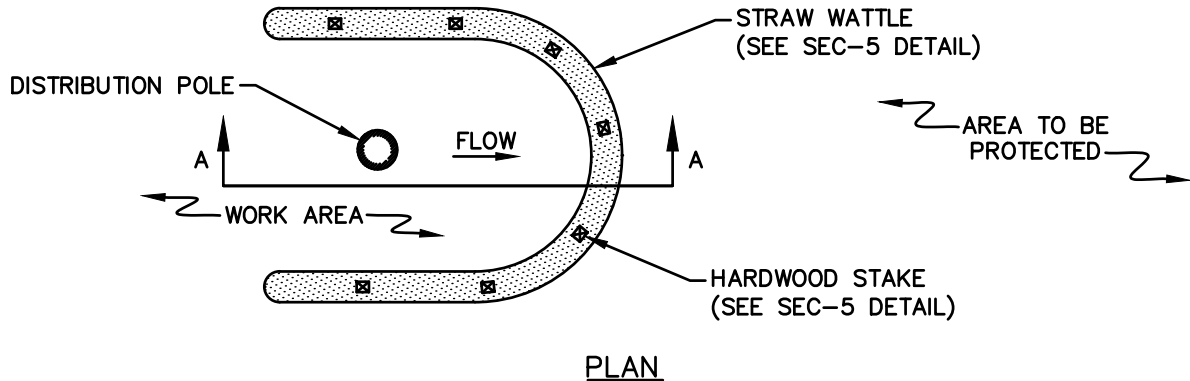
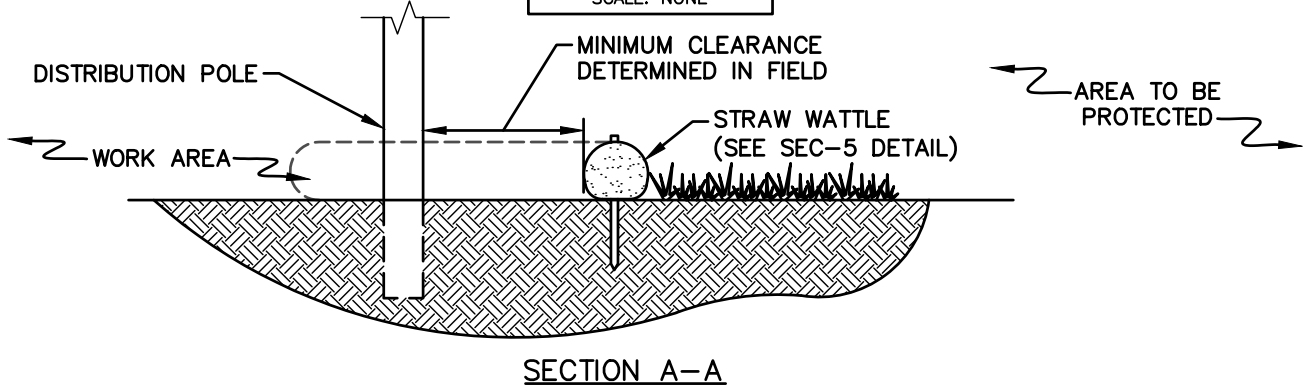
SEC-11
SEEDING OPTIONS -
WETLAND SEED MIX

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES

1. PRODUCT TO BE STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE SEC-5 BMP DETAIL).
2. STRAW BALE BARRIER PER SEC-1 BMP DETAIL TO BE AN AVAILABLE ALTERNATE DEPENDING ON SITE CONDITIONS AT THE DIRECTION OF NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE FIGURE 2).
3. MINIMUM CLEARANCE BETWEEN POLE AND EROSION CONTROL TO BE DETERMINED BY CONDITIONS OF POLE INSTALLATION/REPLACEMENT WORK AND ASSOCIATED DISTURBANCE.

BMP PICTURE



FIGURE 1: TYP. STRAW WATTLE APPLICATION



FIGURE 2: ALT. STRAW BALE APPLICATION

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SEC-12
DISTRIBUTION POLE
SEDIMENT CONTROL

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE

SCALE: NONE



NOTES:

1. PRODUCT TO BE ALTURNAMATS' PREFABRICATED MATS OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. PRODUCT AVAILABLE IN 4X8' UNITS.
3. IF MATS ARE INSTALLED IN A WETLAND AREA, INSTALL EROSION CONTROLS TO CONTAIN MATERIAL UTILIZED IN THE MAT TRANSITIONS.

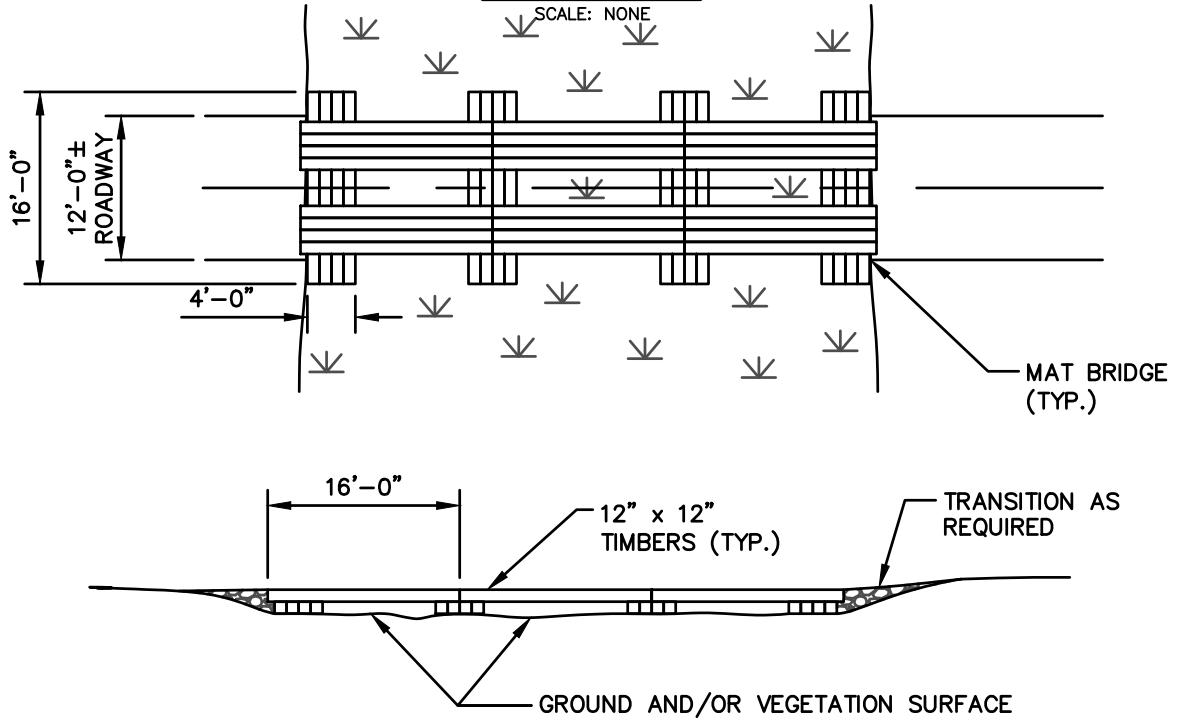
* PICTURE PROVIDED BY ALTURNAMATS
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CM-1
PREFABRICATED MATS *

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL



NOTES:

1. IF MATS ARE INSTALLED IN A WETLAND AREA, INSTALL EROSION CONTROLS TO CONTAIN MATERIAL UTILIZED IN THE MAT TRANSITIONS.

BMP PICTURE



File: Mat_Bridge.dwg

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CM-2
CONSTRUCTION MAT BRIDGE
(1 OF 2)

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE - SINGLE SPAN

SCALE: NONE



NOTES:

1. WHERE STREAM WIDTH ALLOWS, INSTALL CONSTRUCTION MATS TO SPAN THE WATERCOURSE IN ITS ENTIRETY WITHOUT STRINGER PLACEMENT IN THE WATER OR ANY RESTRICTION OF STREAM FLOW.
2. INSTALLATION OF THE CONSTRUCTION MAT BRIDGE SHALL NOT DAMAGE THE STREAM BED AND BANKS. WHERE POSSIBLE, FOOTERS SHALL BE PLACED PARALLEL TO THE TOP OF THE STREAM BANKS, WITH ACCESS MATTING PLACED ACROSS THE TOP OF THE STRINGERS DISTRIBUTING THE WEIGHT OF THE CONSTRUCTION EQUIPMENT.
3. AT STREAM CROSSINGS THAT CANNOT BE SPANNED BY A SINGLE SECTION OF CONSTRUCTION MATTING, AND WHERE PERMITS ALLOW, STRINGERS SHALL BE PLACED ATOP THE STREAM BED PARALLEL TO THE FLOW OF WATER.

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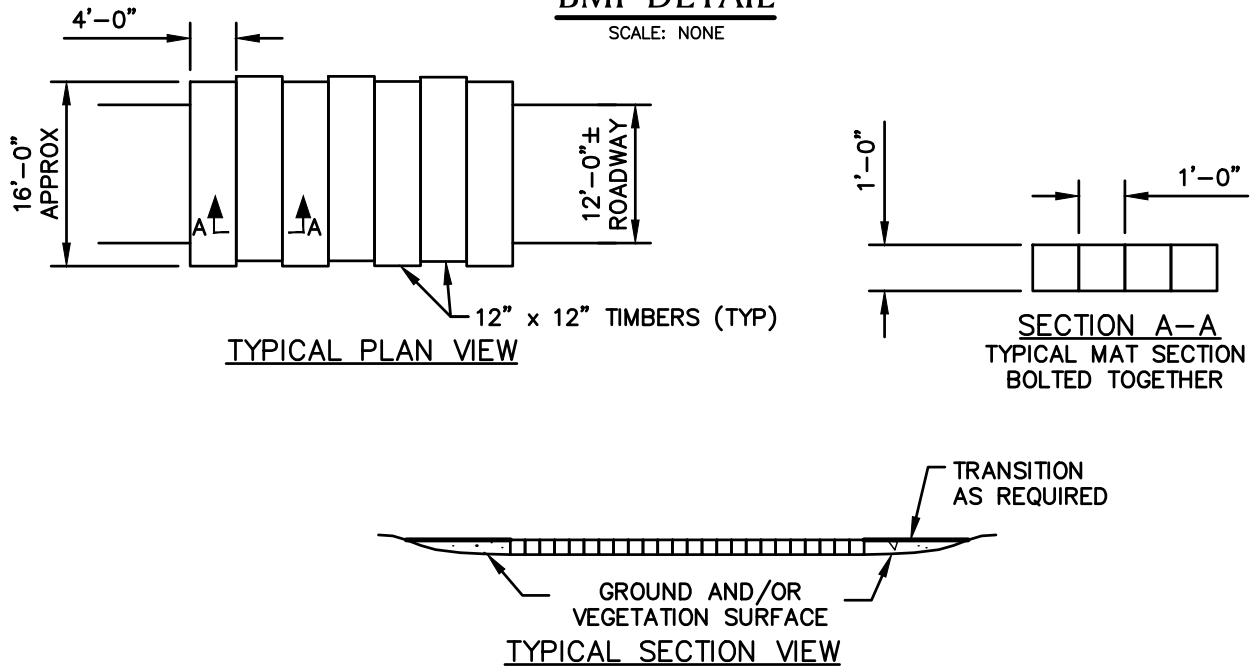
CM-2
CONSTRUCTION MAT BRIDGE
(2 OF 2)

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES:

1. TO BE INSTALLED IF NECESSARY TO PREVENT RUTTING, TO ACCESS STRUCTURES.
2. THIS DETAIL SHOWS TYPICAL DIMENSIONS. SOME CONTRACTOR'S CONSTRUCTION MATS ARE DIMENSIONALLY DIFFERENT FROM WHAT IS SHOWN HERE.
3. DEPENDENT ON SITE CONDITIONS, MULTIPLE LAYERS OF CONSTRUCTION MATS MAY BE INSTALLED.

BMP PICTURE



File: Swamp_Mat_Layout.dwg

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CM-3
CONSTRUCTION MAT LAYOUT
(WITH TRANSITION)

SUBJECT

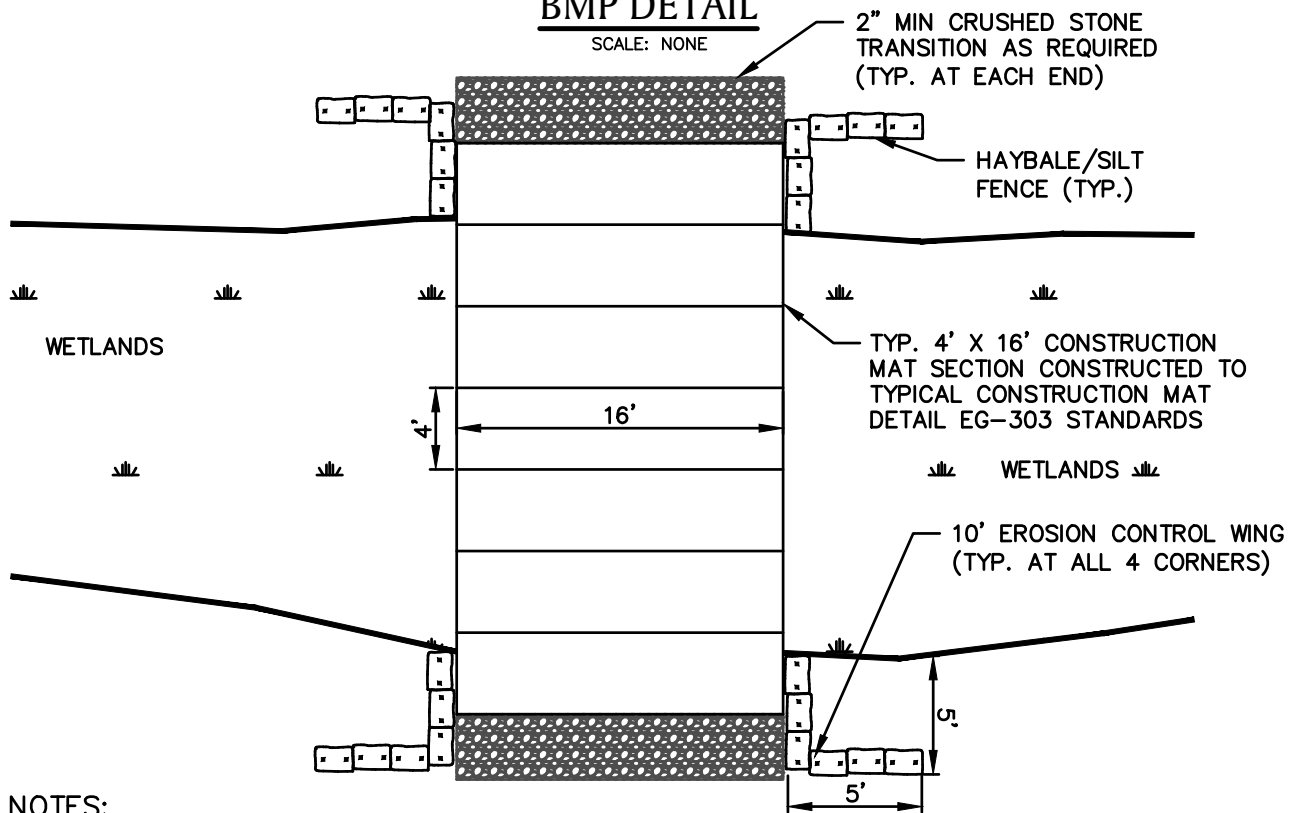
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES:

1. ADD FILTER FABRIC AS NEEDED UNDER STONE TRANSITION RAMPS.
2. ALL MEASUREMENTS AND LOCATIONS ARE APPROXIMATE.

BMP PICTURE



CM-4

CONSTRUCTION MAT LAYOUT
(WITH TRANSITION AND BMPs)

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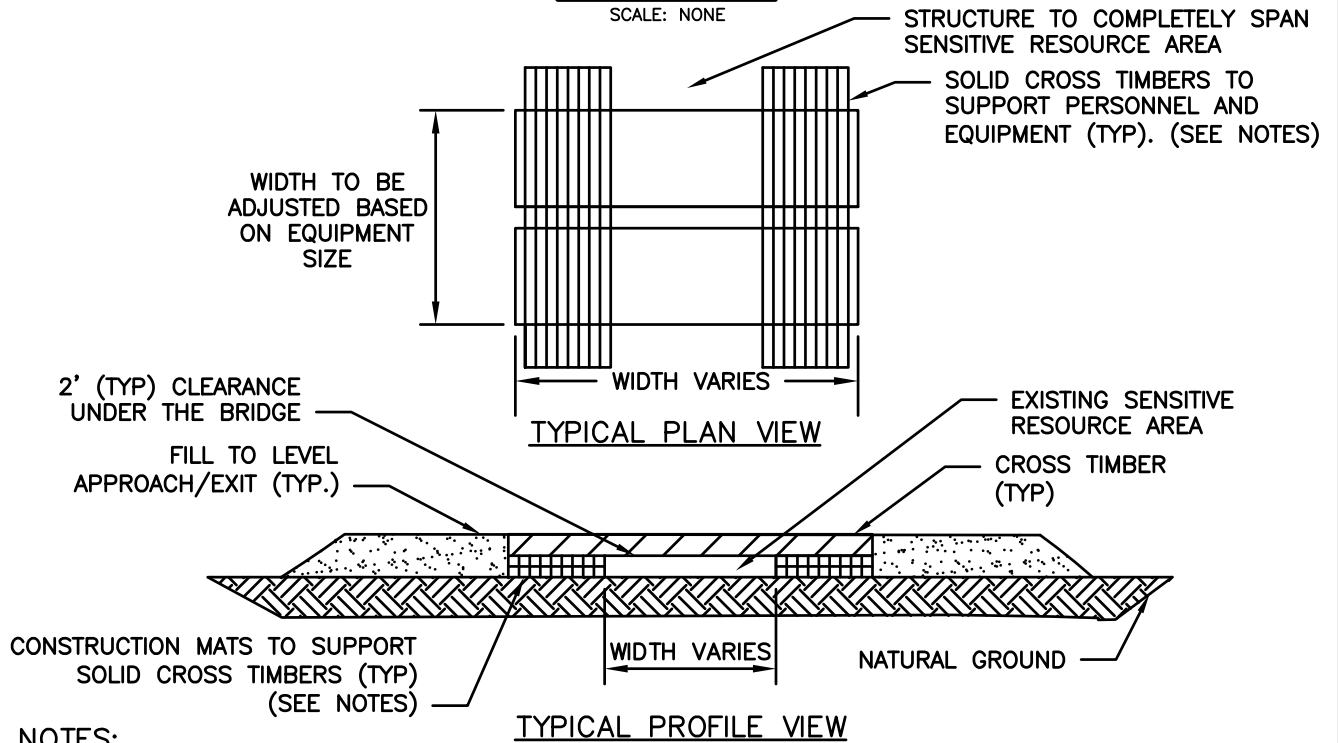
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SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES:

1. THE DETAIL SHOWN IS CONCEPTUAL. CONSTRUCTION MATS AND CROSS TIMBERS SHALL BE SIZED AND SELECTED BASED ON SPAN WIDTH, CROSSING EQUIPMENT AND FIELD CONDITIONS.
2. THE NUMBER OF CONSTRUCTION MATS MAY VARY DEPENDING ON THE CLEARANCE HEIGHT.
3. EQUIPMENT AND PERSONNEL LOAD SHALL BE DISTRIBUTED ON ALL TIMBERS.
4. EACH EQUIPMENT OPERATOR AND USER OF THE FIELD BRIDGE SHALL BE FAMILIAR WITH THE DESIGN AND THE MAXIMUM EQUIPMENT AND PERSONNEL LOADS.
5. THIS DETAIL MAY NOT BE APPLICABLE IN ALL FIELD CONDITIONS.
6. INSTALL EROSION CONTROLS ADJACENT TO THE CULVERT ENDS TO PROTECT THE WATERWAY FROM ROADWAY DEBRIS.

BMP PICTURE



File: Swamp_Mat_AIR_BRIDGE.dwg

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CM-5
CONSTRUCTION MAT - AIR BRIDGE

SUBJECT

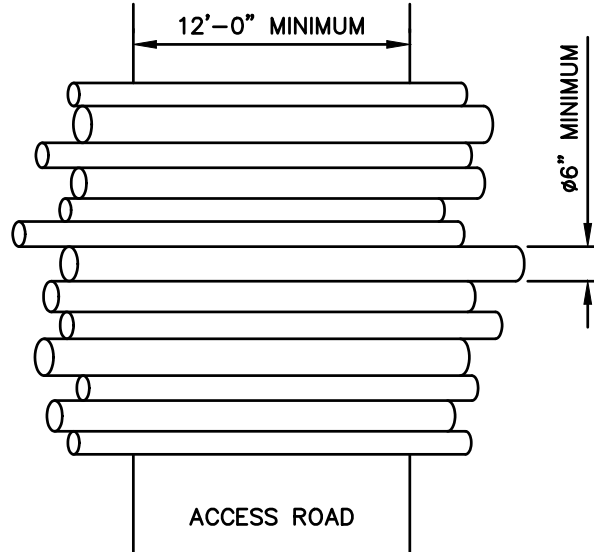
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



RANDOM LENGTH AND DIAMETER LOGS PLACED ACROSS AN ACCESS ROAD

NOTE:

1. A SIMILAR BRUSH MAT INSTALLATION CONSISTING OF SMALLER DIAMETER STEMS AND LOGS CAN BE USED.
2. CORDUROY ROADS SHALL ONLY BE USED IN EMERGENCIES OR AFTER APPROVAL FROM THE PROJECT ENVIRONMENTAL CONSULTANT OR NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



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**CM-6
CORDUROY ROAD**

SUBJECT

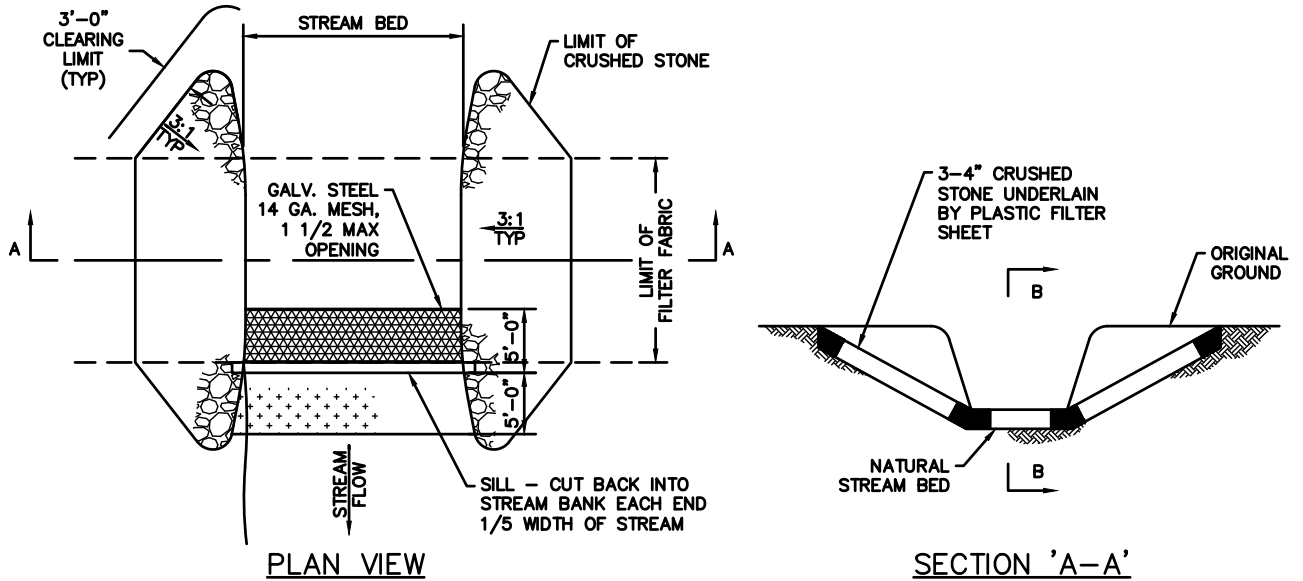
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



BMP PICTURE



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CM-7
ROCK FORD

SUBJECT

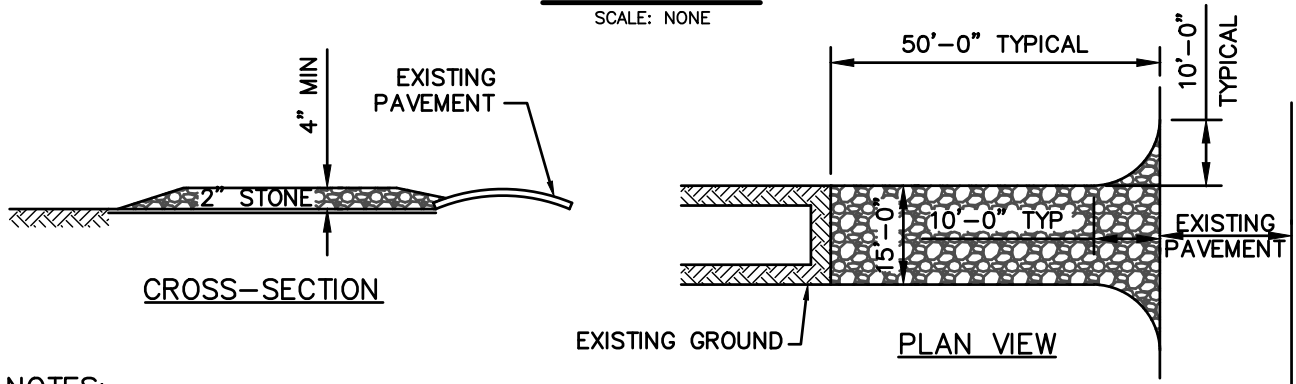
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES:

1. STONE SIZE – USE 2” STONE (MINIMUM) TO 6” STONE (MAXIMUM)
2. LENGTH – GREATER THAN OR EQUAL TO 50 FEET
3. THICKNESS – 4”
4. WIDTH – FIFTEEN (15) FOOT TYP., BUT NOT LESS THAN FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS ENTRANCE. IF PIPING IS IMPRACTICAL, MOUNTABLE BERM SHALL BE PERMITTED.
6. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
7. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED.
8. THE CLEAN STONE SHOULD BE INSTALLED OVER A GEOTEXTILE FABRIC. GEOTEXTILE FABRIC MAY BE OMITTED FOR PERMANENT CONSTRUCTION ENTRANCES/EXITS ON A CASE-BY-CASE BASIS WITH THE APPROVAL OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.
9. FOLLOWING CONSTRUCTION, THE CONSTRUCTION ENTRANCE/EXIT SHALL BE REMOVED AND THE AREA GRADED, SEED, AND MULCHED AS NEEDED. ENTRANCE/EXITS MAY REMAIN DEPENDING UPON FUTURE ACCESS NEEDS AND/OR PROJECT-SPECIFIC APPROVALS BUT REQUIRES APPROVALS FROM THE NATIONAL GRID ENVIRONMENTAL SCIENTIST AND PROPERTY LEGAL.

BMP PICTURE



File: Temp_Construction_Ent.dwg

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CM-8
TEMPORARY CONSTRUCTION
ENTRANCE/ EXIT

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

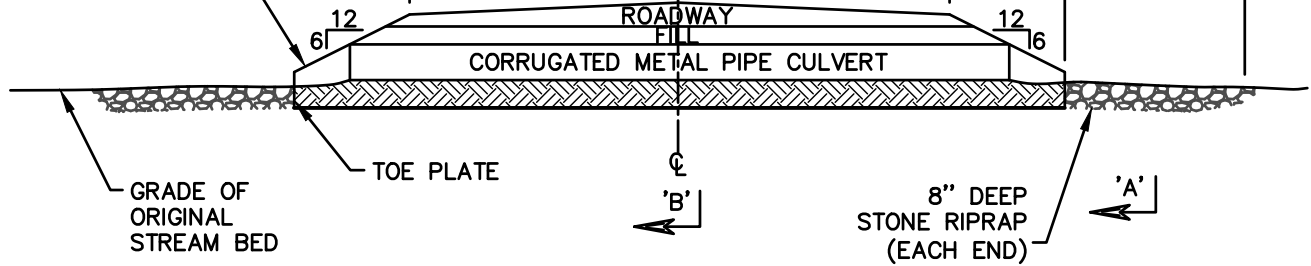
BMP DETAIL

SCALE: NONE

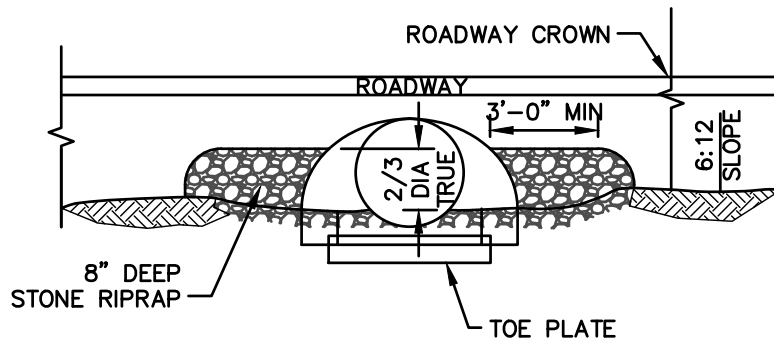
15'-0" ROADWAY

5'-0"

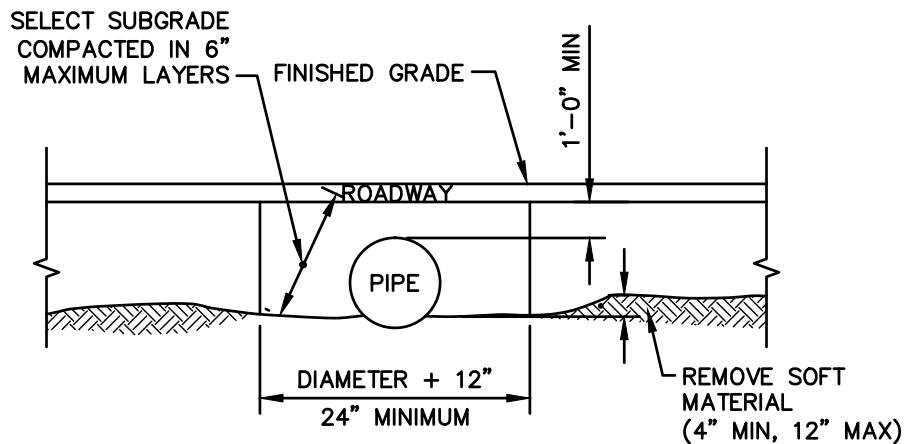
STANDARD FLARED
END SECTION
(EACH END)



CROSS SECTION



SECTION 'A-A'
(SAME BOTH ENDS)



SECTION 'B-B'

CM-9
TEMPORARY CONSTRUCTION
CULVERT (1 OF 2)

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SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

NOTES:

SCALE: NONE

1. CULVERT DESIGN AND LAYOUT SHALL BE COORDINATED WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST (NGES).
2. CROWN ROADWAY 1/2 INCH PER FOOT.
3. LAY THE CULVERT STRAIGHT AND AS NEARLY AS POSSIBLE ALONG THE EXISTING STREAM BED AND WITH THE INVERTS AT OR SLIGHTLY BELOW BED ELEVATION.
4. CORRUGATED METAL PIPE IS TO BE GALVANIZED STEEL, OR ALUMINIZED STEEL (TYPE 2), WITH BOLTED CONNECTORS.
5. DIAMETERS SHALL BE AS PER THE PROJECT DRAWINGS AND THE SPECIFICATION. THE PIPE GAGE SHALL BE AS FOLLOWS:

DIAMETER (INCHES)	GAGE
12" - 15"	.004"
18" - 24"	.079"
30" - 36"	.109"

6. INSTALLATION OF CULVERTS LARGER THAN 36 INCH DIAMETER SHALL REQUIRE SPECIAL ENGINEERING DESIGN.
7. SELECT SUBGRADE SHALL BE A GRANULAR MATERIAL AS DESCRIBED IN NYSDOT SPECIFICATION ITEM 203-2.02C, OR AS APPROVED BY A NGES.
8. STONE RIPRAP SHALL BE AS DESCRIBED IN NYSDOT SPECIFICATION ITEM 203-2.02D, WITH 8 INCH MAXIMUM SIZE, OR AS APPROVED BY A NGES. EXCEPT WHERE PROTECTED BY STONE, ALL EMBANKMENT SLOPES ARE TO BE STABILIZED, MULCHED AND SEEDS AS PER PROJECT SPECIFICATIONS.
9. OUTLET SHOULD BE CONFIGURED NOT TO CREATE HYDRAULIC JUMP OR PLUNGE POOL.
10. INSTALL EROSION CONTROLS ADJACENT TO THE CULVERT ENDS TO PROTECT THE WATERWAY FROM ROADWAY DEBRIS.

BMP PICTURE



File: Temp_Constr_Culvert.dwg

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CM-9
TEMPORARY CONSTRUCTION
CULVERT (2 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



NOTE:

1. PICTURE SHOWS VIEW OF ACCESS WAY STABILIZATION ADJACENT TO A WETLAND.
2. COORDINATE STABILIZATION DESIGN AND PRODUCT WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

File: Access_Stabilization.dwg

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CM-10
ACCESS WAY STABILIZATION

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



NO ACCESS – WETLAND/STREAM CROSSING MATS REQUIRED



**NO ACCESS – A.) PROJECT LIMITS E.G. ROW LIMITS
B.) HISTORICAL/CULTURAL
C.) ENVIRONMENTALLY SENSITIVE E.G. THREATENED & ENDANGERED
D.) OTHER**



APPROVED ACCESS

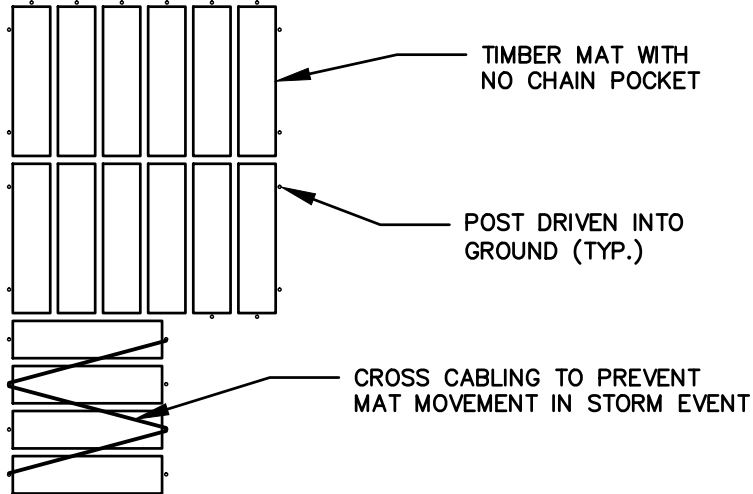
File: Construction_Signage.dwg

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL 1

SCALE: NONE



TYPICAL PLAN VIEW

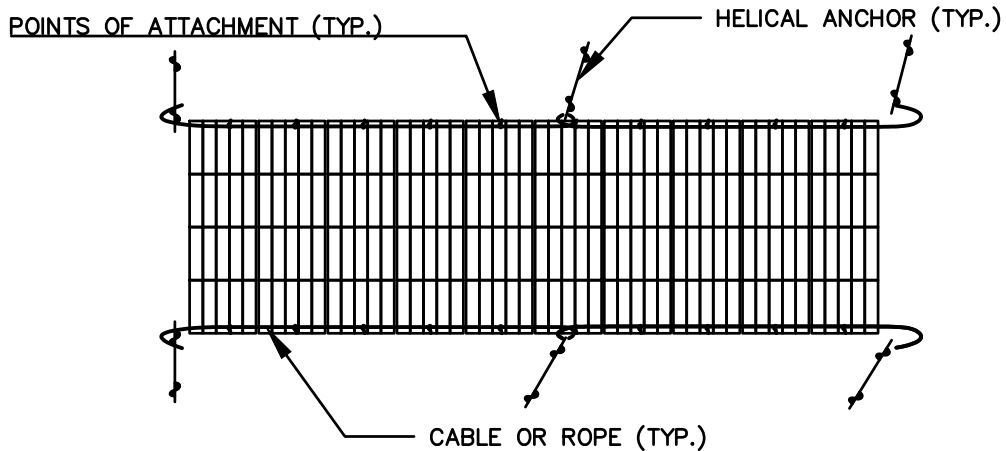
NOTES:

1. EXAMPLES OF ANCHORING ONLY. MATTING CONTRACTOR SHALL PROPOSE THE METHOD OF ANCHORING BASED ON FIELD CONDITIONS.
2. ANCHORING METHOD TO BE APPROVED BY THE NATIONAL GRID ENVIRONMENTAL SCIENTIST AND TRANSMISSION LINE CONSTRUCTION SUPERVISOR.

BMP DETAIL 2

NOTES:

1. TYPICAL HELICAL ANCHOR AND CABLE CONFIGURATION FOR MAT CONTAINMENT IN FLOODPLAINS/LAND SUBJECT TO FLOODING.
2. TYPICAL POINTS OF ATTACHMENT HEAVY STAPLES, EYE BOLTS OR OTHER SUITABLE HARDWARE TO SECURE ATTACHMENT OF MAT TO LINEAR CABLE. IF CHAIN POCKETS ARE PRESENT IN THE MATS CABLE OR ROPE CAN BE LOOPED THROUGH RODS.



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CM-12
EXAMPLE OF CONSTRUCTION MAT
ANCHORING (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

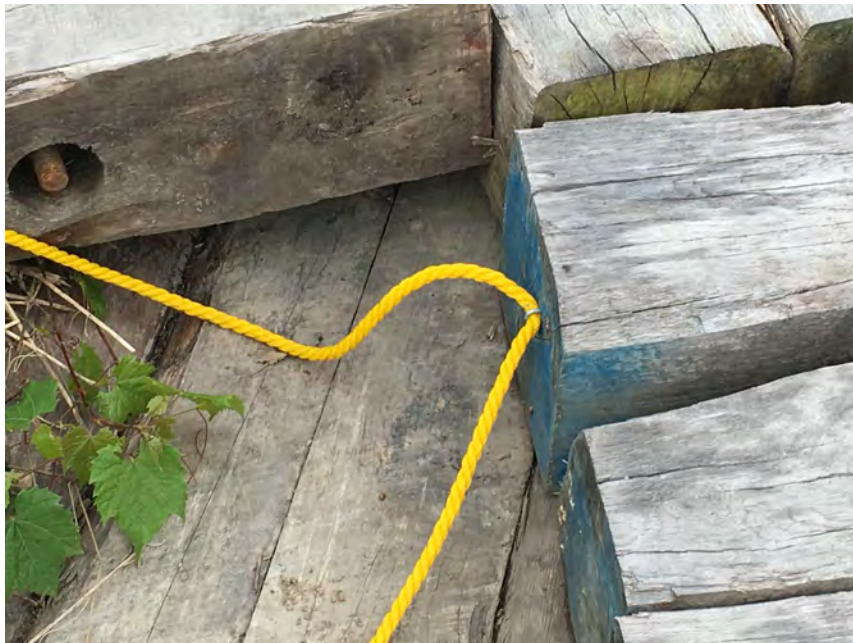
Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE 1



BMP PICTURE 2



File: Const_Mat_Anchoring.dwg

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CM-12
EXAMPLE OF CONSTRUCTION MAT
ANCHORING (2 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

WIRE BACKED SILT FENCE

**MUTUAL INDUSTRIES WIRE BACKED SILT FENCE**

PART # 1776-14-24

36" X 100'

36" MISF 1776 FABRIC

24" 14GA WIRE MESH

OPENING OF MESH 2" X 4"

FABRIC HOG RINGED EVERY 12"-18" ALONG THE TOP OF THE FENCE

ROLL WEIGHT 40 LBS

32 ROLLS PER PALLET

NOTES:

1. PRODUCT TO BE MUTUAL INDUSTRIES' WIRE BACKED SILT FENCE OR APPROVED EQUAL BY NATIONAL ENVIRONMENTAL SCIENTIST.
2. COORDINATE INSTALLATION METHOD AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

* PICTURE AND DETAIL PROVIDED BY MUTUAL INDUSTRIES

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AA-1

REINFORCED SILT FENCE *

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



NOTE:

1. PICTURE SHOWS SEDIMENT FILTER WITHIN A WETLAND.

File: Sed_Filter.dwg

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AA-2
SEDIMENT FILTER

SUBJECT

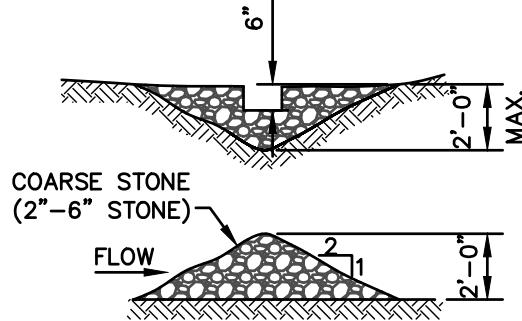
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



STONE CHECK DAM

NOTES:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. THE CENTER OF THE CHECK DAM MUST BE AT LEAST 6" LOWER THAN THE OUTER EDGES.
4. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
5. MAX. SPACING: TOE OF THE UPSTREAM DAM IS SAME ELEVATION AS TOP OF DOWNSTREAM DAM.
6. STONE SHALL BE FREE OF FINE PARTICLES TO PREVENT TURBID DISCHARGES.

BMP PICTURE



NOTE: A SMALLER STONE SIZE IS SHOWN IN THIS PICTURE.

File: Stone_Check_Dam.dwg

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AA-3
STONE CHECK DAMS

SUBJECT

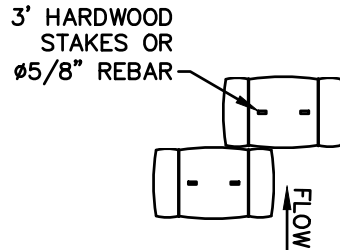
Access, Maintenance and Construction
Best Management Practices

Reference

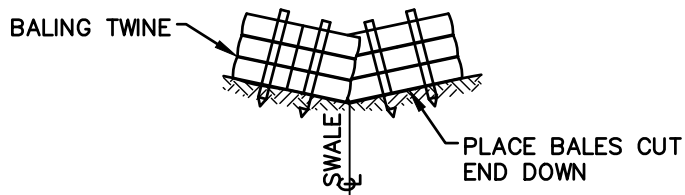
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



PLAN VIEW



SECTION VIEW

NOTES:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



File: Straw_Check_Dam.dwg

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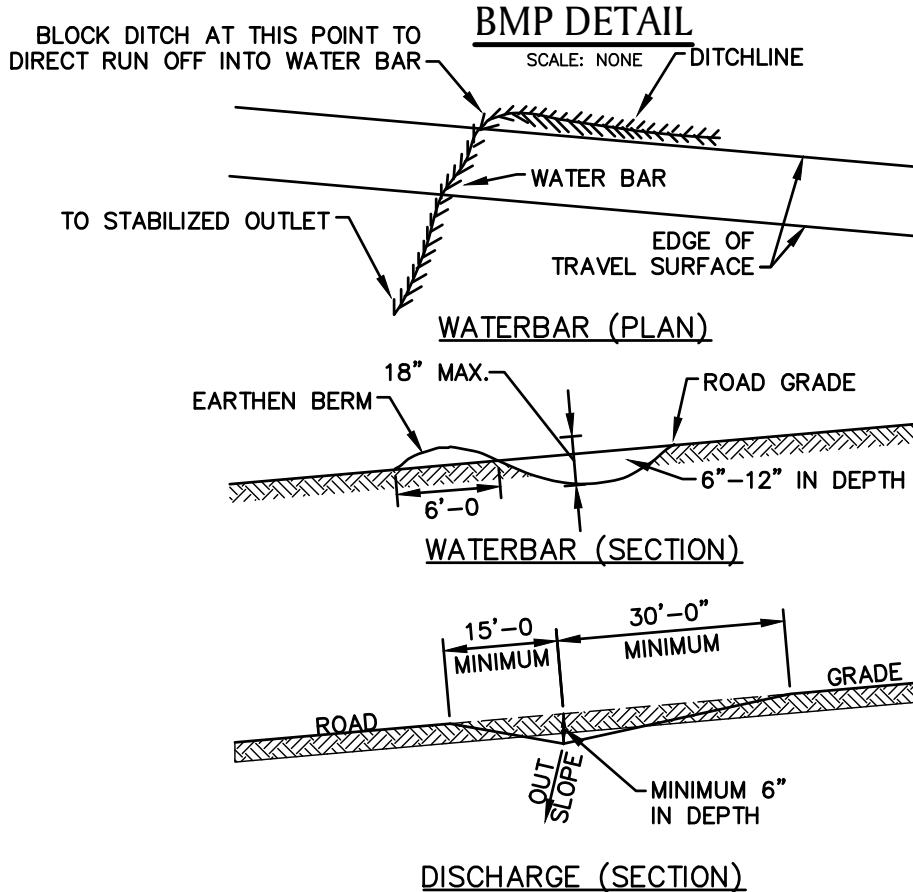
AA-4
STRAW / HAYBALE CHECK DAM

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)



NOTE:

1. LINE WITH 2"–6" STONE UNDERLAIN BY GEOTEXTILE FILTER FABRIC, KEYED INTO ROAD SURFACE AT LEAST 10 FEET EACH SIDE OF WATERBAR.
2. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



File: Waterbar.dwg

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**AA-5
WATERBAR**

SUBJECT

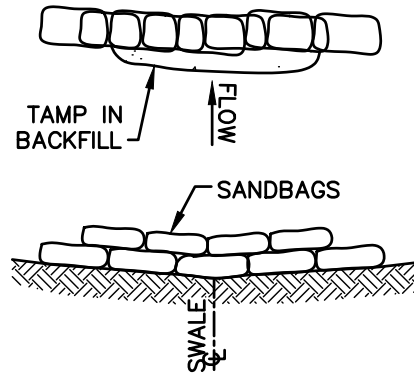
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



**SANDBAG
CHECK DAM**

NOTES:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



NOTE:

1. PICTURE DOES NOT DEPICT "TAMP IN BACKFILL"

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



NOTE:

1. EXACT SIZE, LOCATION AND DESIGN IS DEPENDANT ON SITE CONDITIONS, AND LOCAL AND STATE REGULATIONS. COORDINATE THIS BMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.

File: Earth_Dike.dwg

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**AA-7
EARTH DIKE**

SUBJECT

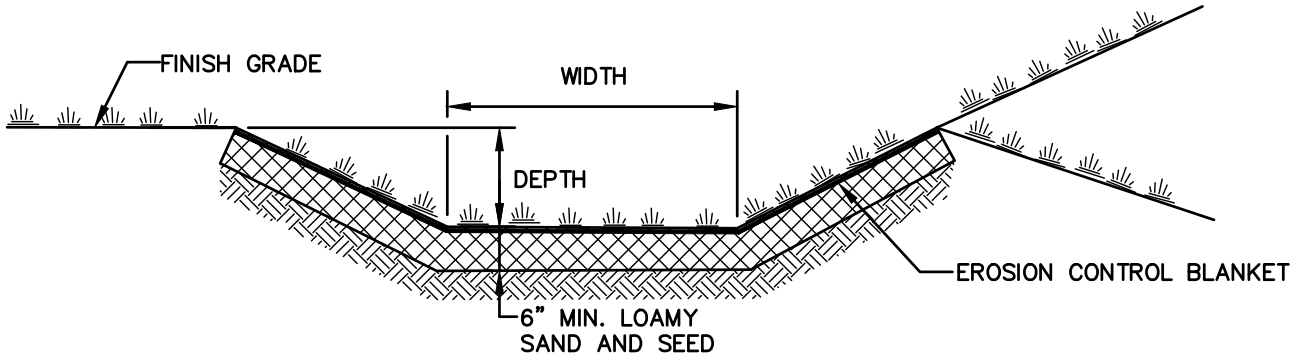
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES:

1. WIDTH AND DEPTH OF SWALE, AND EROSION CONTROL BLANKET TYPE TO BE COORDINATED WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. REFER TO DETAILS SEC-10 AND SEC-11 FOR SEED MIXTURE OPTIONS.

BMP PICTURE



File: Lined_Drainage_Swale.dwg

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AA-8
DRAINAGE SWALE AND
LINED DITCH

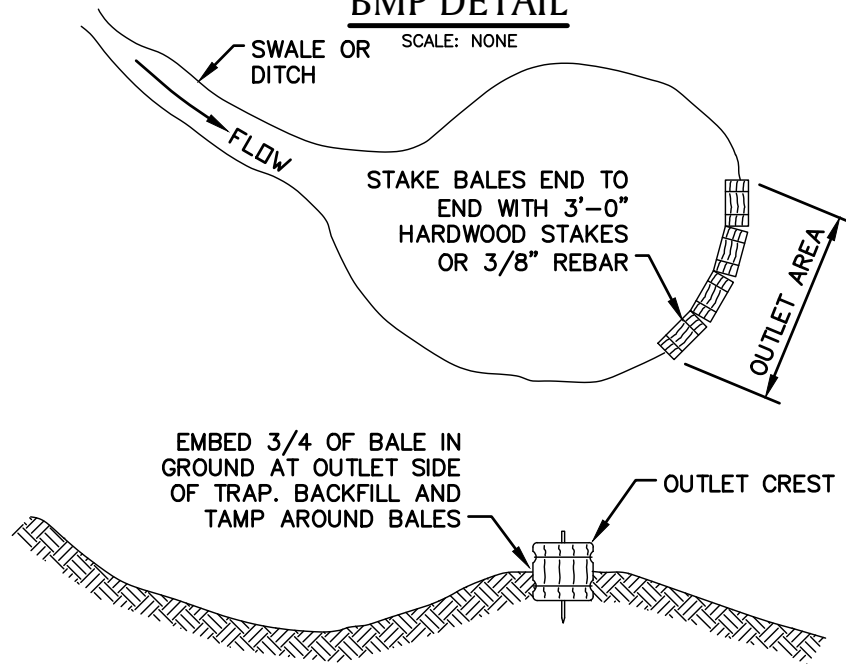
SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL



TYPICAL PROFILE

NOTES

1. SIZE, SHAPE AND PROFILE OF SEDIMENT WILL VARY ACCORDING TO ANTICIPATED FLOW VOLUME AND SURROUNDING TERRAIN AND SHALL BE COORDIANATED WITH THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE BASIN SHALL BE CUT BELOW THE GROUNDLINE. FILL SHALL NOT BE USED TO HOLD WATER UNLESS ROLLED AND COMPACTED.
3. OUTLET AREA IS TO REMAIN FREE OF EXCAVATION SPOILS.
4. OUTLET CREST ELEVATION SHALL BE LOWER THAN INLET ELEVATION AND AT LEAST 1'-0" BELOW THE TOP OF THE BASIN. ARMOUR SLOPES >8% IN OUTLET AREA WITH STONE OF APPROPRIATE SIZE TO PREVENT SCOUR.
5. ARMOUR SLOPES >8% IN OUTLET AREA WITH STONE OF APPROPRIATE SIZE TO PREVENT SCOUR.

BMP PICTURE



File: Sedimentation_Basin.dwg

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**AA-9
SEDIMENTATION BASIN**

SUBJECT

Access, Maintenance and Construction
Best Management Practices

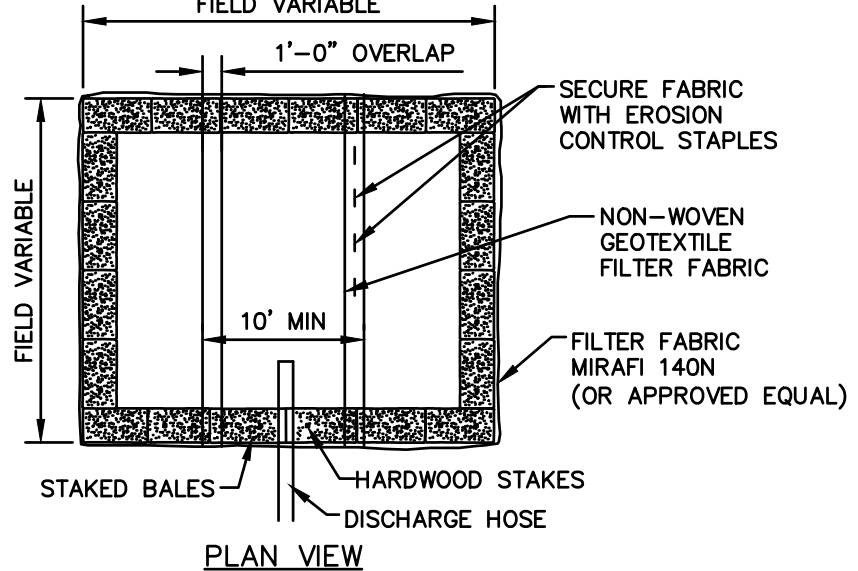
Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

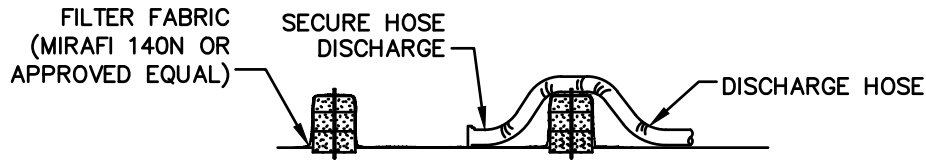
BMP DETAIL

SCALE: NONE

FIELD VARIABLE



PLAN VIEW



CROSS-SECTION

NOTES:

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS,
2. THE BASIN TO BE SIZED TO PREVENT DISCHARGE WATER FROM OVERTOPPING BASIN.
3. KEEP AS FAR FROM WETLANDS AS PRACTICAL.
4. CLEAN AND REMOVE AS SOON AS DEWATERING IS COMPLETE.

BMP PICTURE



File: Dewat_Bas_Small.dwg

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AA-10
DEWATERING BASIN
(SMALL SCALE)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



NOTE:

1. EXACT SIZE, LOCATION AND DESIGN IS DEPENDANT ON SITE CONDITIONS, AND LOCAL AND STATE REGULATIONS. COORDINATE THIS BMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.

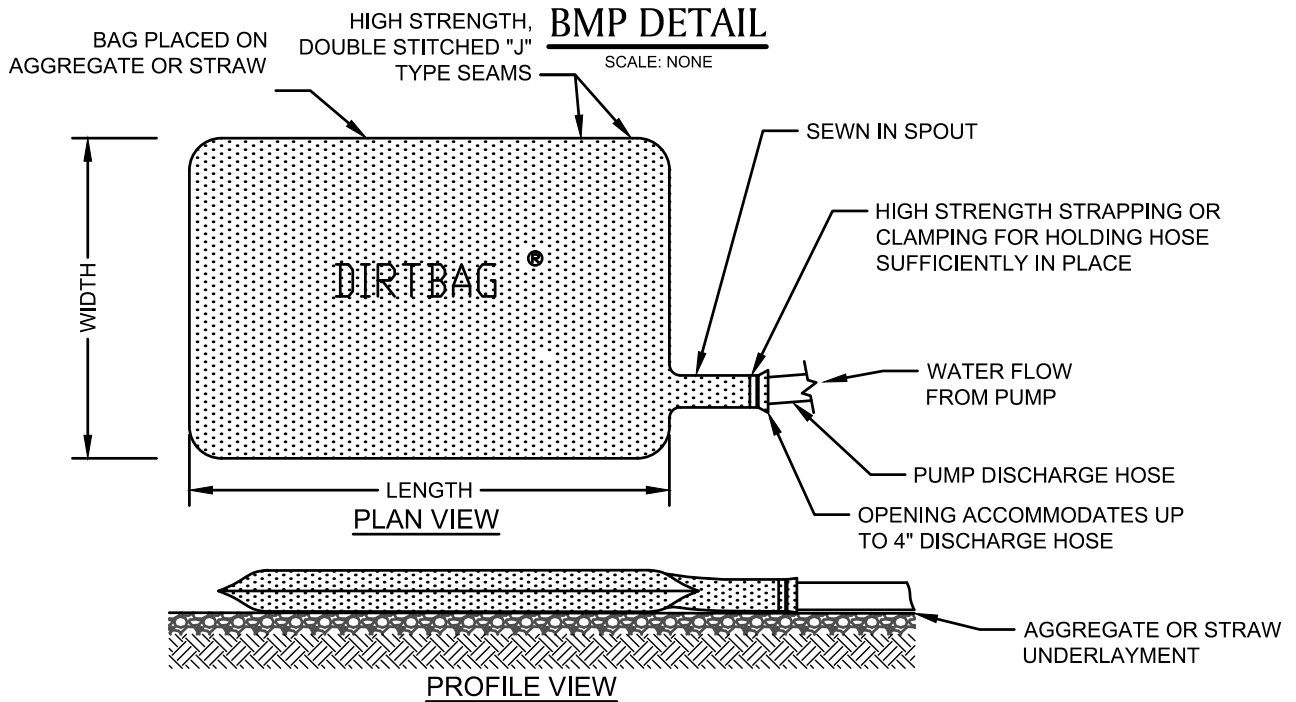
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AA-11
DEWATERING BASIN -
LARGE SCALE

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)



NOTE:
ONCE PUMPING COMMENCES, THE DIRT BAG SHALL BE MONITORED FREQUENTLY TO ASSURE THAT THE CONNECTIONS ARE SECURELY FASTENED AND THE RATE OF WATER DELIVERY TO THE STRUCTURE IS LOW ENOUGH TO PREVENT UNFILTERED WATER FROM FLOWING FROM THE HOSE CONNECTIONS OR BAG.

BMP PICTURE



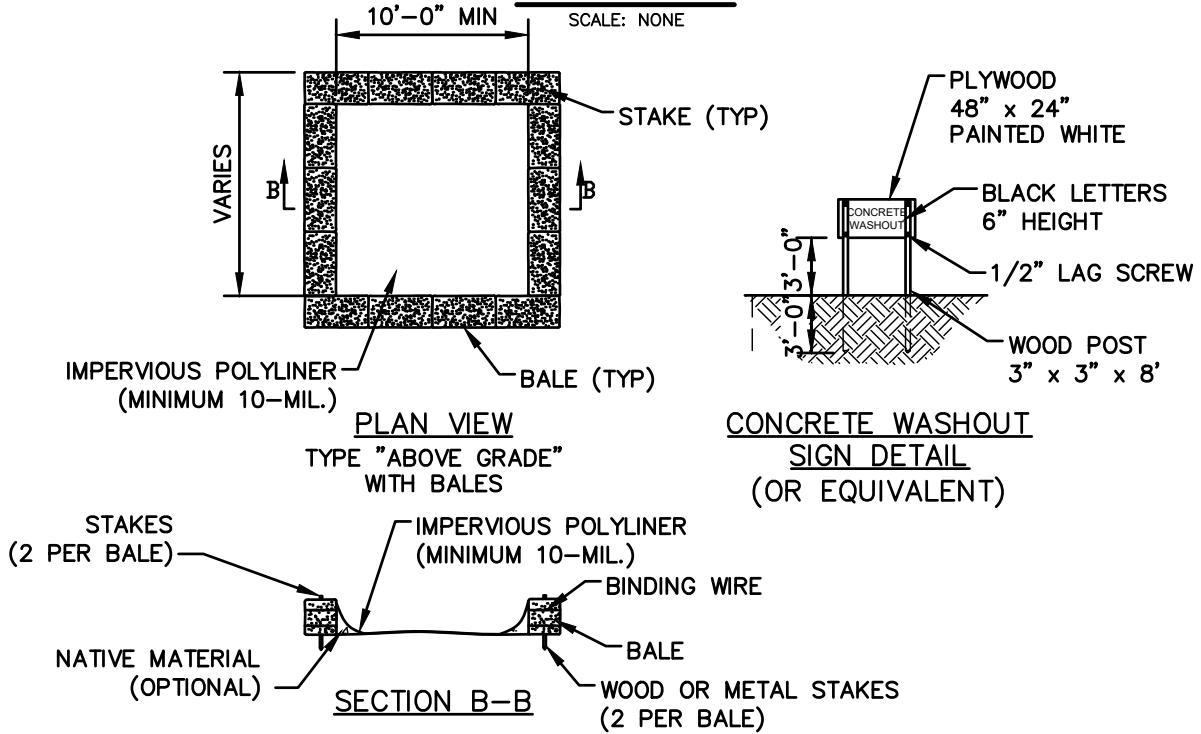
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**AA-12
DIRTBAG ***

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL



NOTES:

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS. COORDINATE SIZE AND LOCATION OF CONCRETE WASTE SUMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. KEEP AS FAR FROM DRAINAGE CHANNELS AND WETLAND AREAS AS PRACTICAL.
3. SUMPS TO BE CLEANED AND WASTE CONCRETE REMOVED AND PROPERLY DISPOSED OF UPON COMPLETION OF WORK.
4. SEE ADDITIONAL NOTES ON DETAIL AA-14.

BMP PICTURE



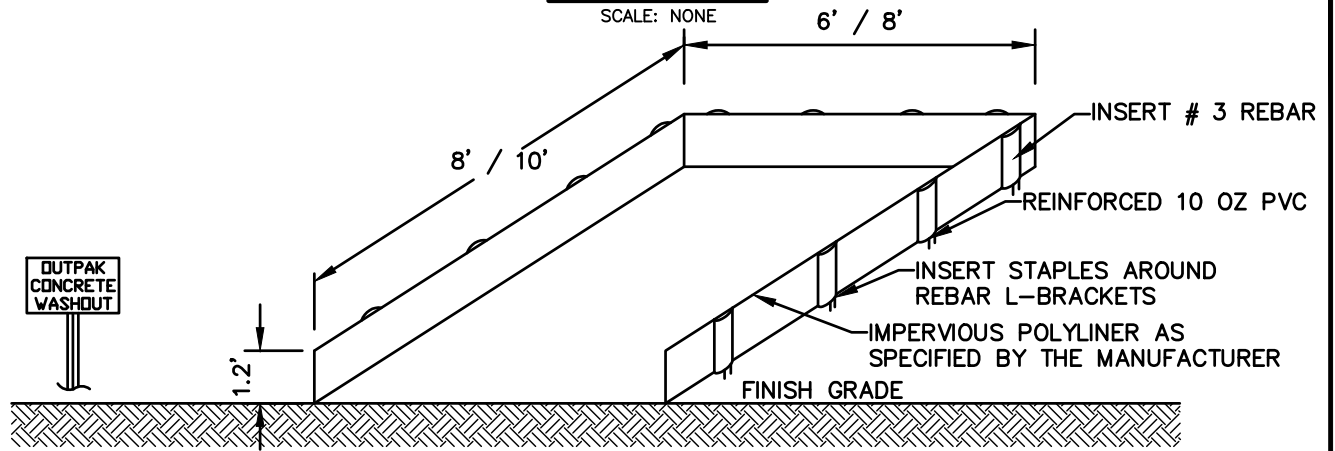
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AA-13
CONCRETE WASTE SUMP

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL



CROSS SECTION

NOTES:

1. PRODUCT TO BE OUTPAK PVC CONCRETE WASHOUT OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT.
3. SIGNS SHALL BE PLACED AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT.
4. THE CONCRETE WASHOUT AREA WILL BE REPLACED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTE CONCRETE AND OTHER LIQUID WASTE.
5. WASHOUT RESIDUE SHALL BE REMOVED FROM THE SITE AND DISPENSED OF AT AN APPROVED WASTE SITE.
6. DO NOT MIX EXCESS AMOUNTS OF FRESH CONCRETE OR CEMENT ON-SITE.
7. DO NOT WASH OUT CONCRETE TRUCKS INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS.
8. AVOID DUMPING EXCESS CONCRETE IN NON-DESIGNATED DUMPING AREAS.
9. LOCATE WASHOUT AREA AT LEAST 50' FROM STORM DRAIN, OPEN DITCHES, OR WATERBODIES. COORDINATE LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
10. WASH OUT WASTES INTO THE OUTPAK WASHOUT WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND THEN DISPOSED OF PROPERLY.
11. A SECURE, NON-COLLAPSING, NON-WATER COLLECTING COVER MUST BE PLACED OVER CONCRETE WASHOUT PRIOR TO PREDICTED WET WEATHER TO PREVENT ACCUMULATION AND OVERFLOW OF PRECIPITATION.

BMP PICTURE



* PICTURE AND DETAIL PROVIDED BY OUTPAK WASHOUT
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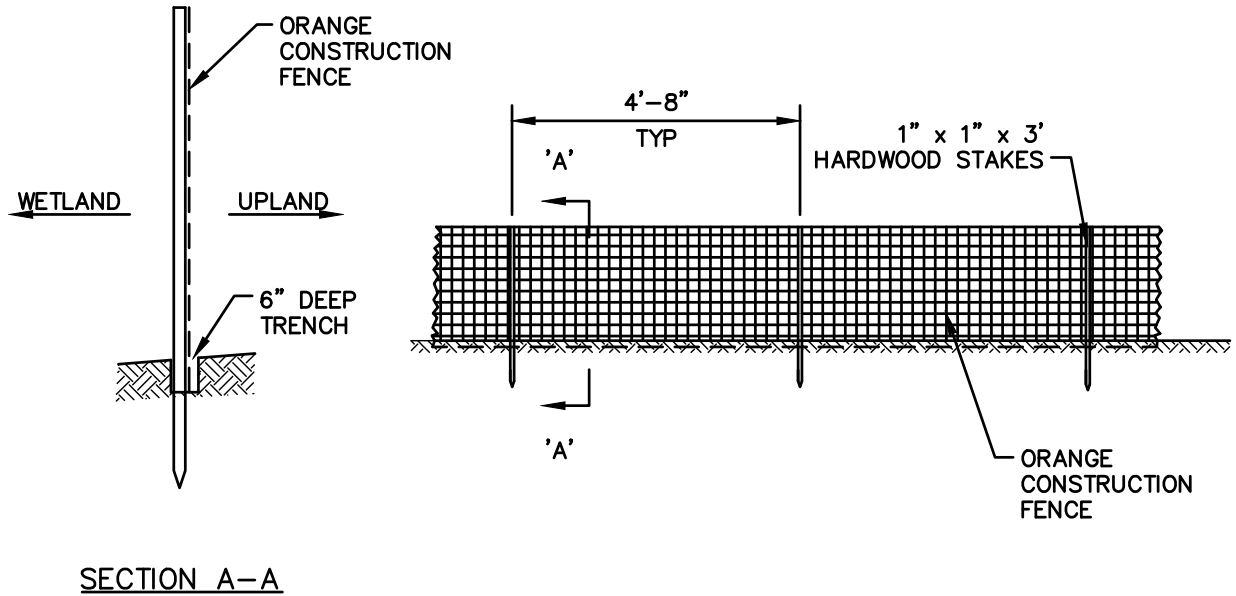
AA-14
OUTPAK CONCRETE WASHOUT *

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



BMP PICTURE



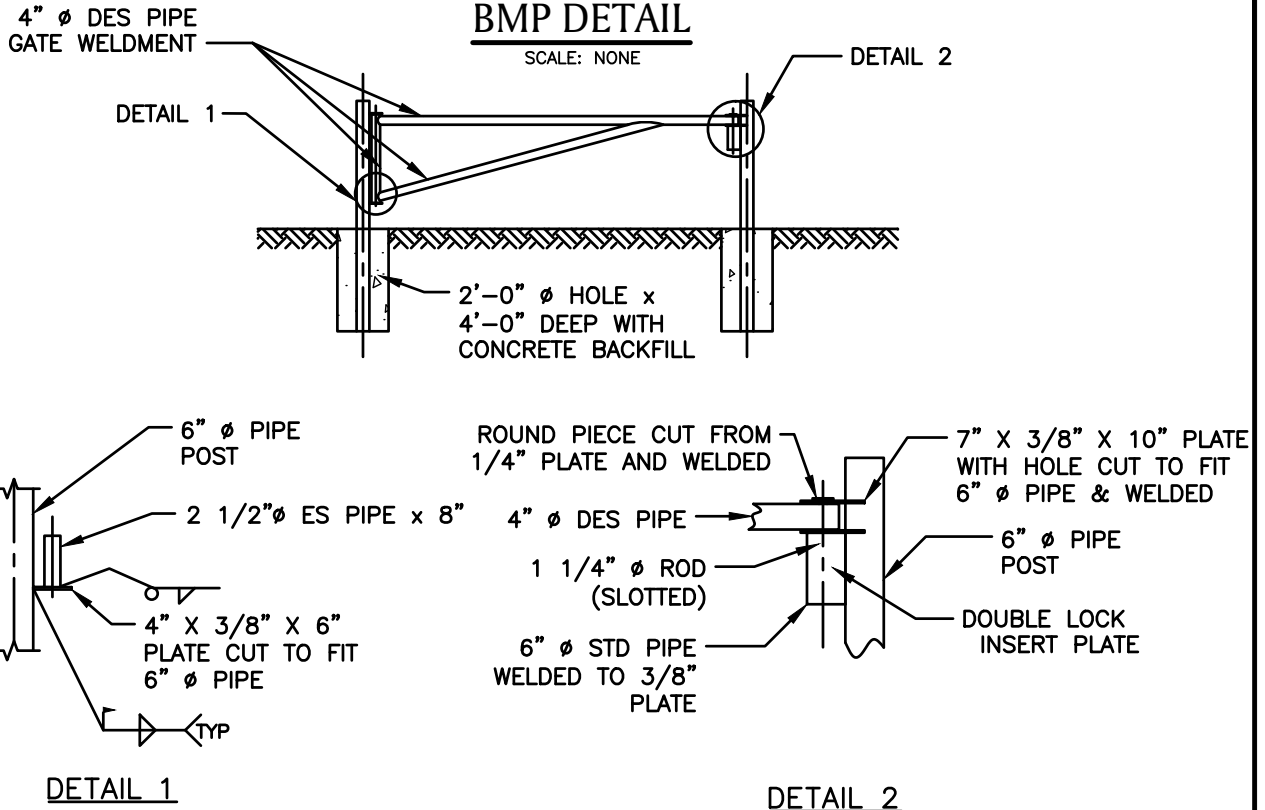
File: Barrier_Fence.dwg

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AA-15
BARRIER FENCE
(CONSTRUCTION FENCE)

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)



NOTES:

1. ALL GATE STEEL PIPES SHALL BE IN ACCORDANCE WITH ASTM A-501, PLATES SHALL BE ASTM A-36.
2. ALL STEEL PIPES SHALL BE PRIMED WITH ZINC-CHROMATE PRIMER AND FINISHED WITH AN APPROVED OSHA "SAFETY YELLOW" TOP COAT COMPATIBLE WITH THE PRIMER AND FOR EXTERIOR EXPOSURE.
3. REFLECTORS SHALL BE SPACED AT 3 FEET ALONG THE LENGTH OF THE CROSSBAR AND BRACE
4. BACKFILL AT POSTS TO BE COMPACTED.

BMP PICTURE



SUBJECT

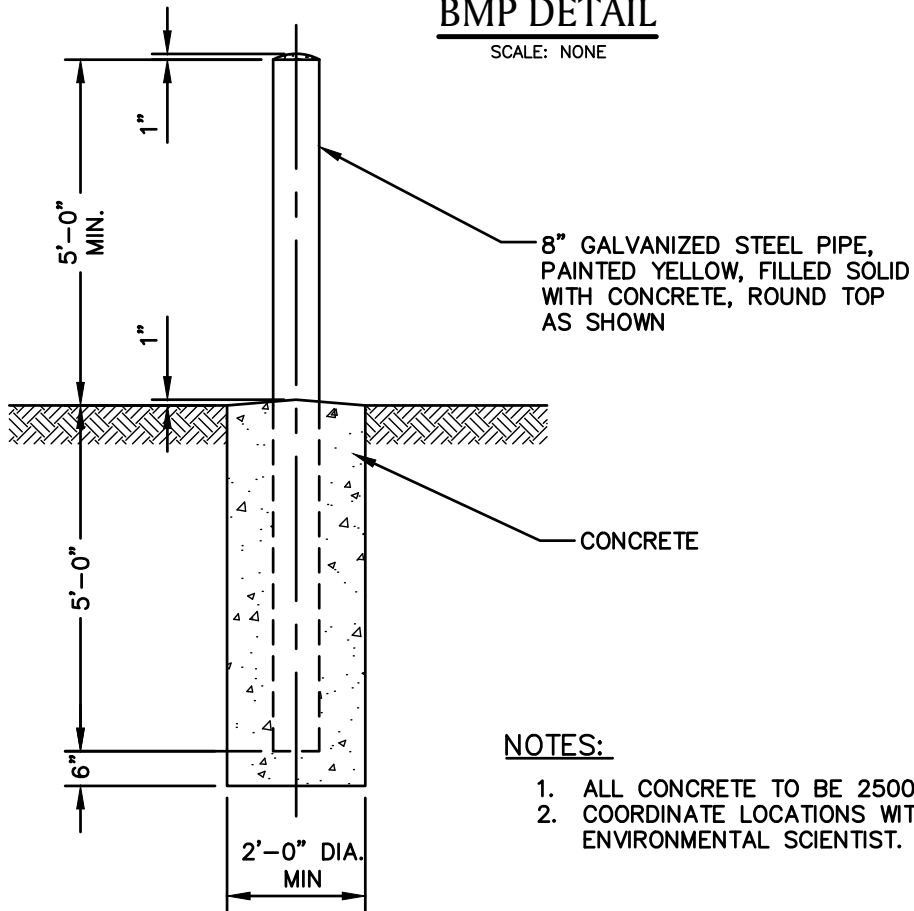
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

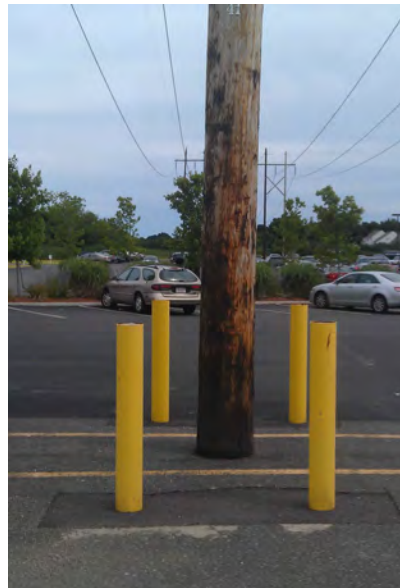
SCALE: NONE



NOTES:

1. ALL CONCRETE TO BE 2500 P.S.I. MINIMUM.
2. COORDINATE LOCATIONS WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



File: Bollard.dwg

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AA-17
BOLLARD

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP



Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer’s recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. Driving Areas – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access routes.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer’s recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geotextiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Definition

The control of dust resulting from land-disturbing activities.

Purpose

To prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the local permitting authority.

Construction Specifications

A. Non-driving Areas – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

* **BMP INFORMATION FROM "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (AUGUST, 2005)." INFORMATION OBTAINED VIA WEBSITE: <http://www.dec.ny.gov/chemical/29086.html>**
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SUBJECT

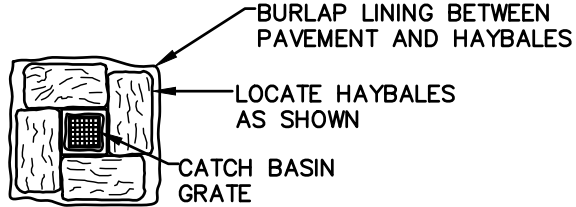
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



TIE HAYBALES TOP &
BOTTOM WITH 14
GAUGE WIRE



NOTES:

1. SURROUND STREET DRAINAGE STRUCTURE INLET WITH HAY BALES PRIOR TO CONSTRUCTION AND MAINTAIN UNTIL CONSTRUCTION IS COMPLETED. ACCUMULATED SEDIMENTS SHALL BE REMOVED.
2. HAYBALES PLACED ON PAVEMENT SHALL HAVE BURLAP PLACED BETWEEN PAVEMENT AND HAYBALE

BMP PICTURE



File: CB_Inlet_Protection.dwg

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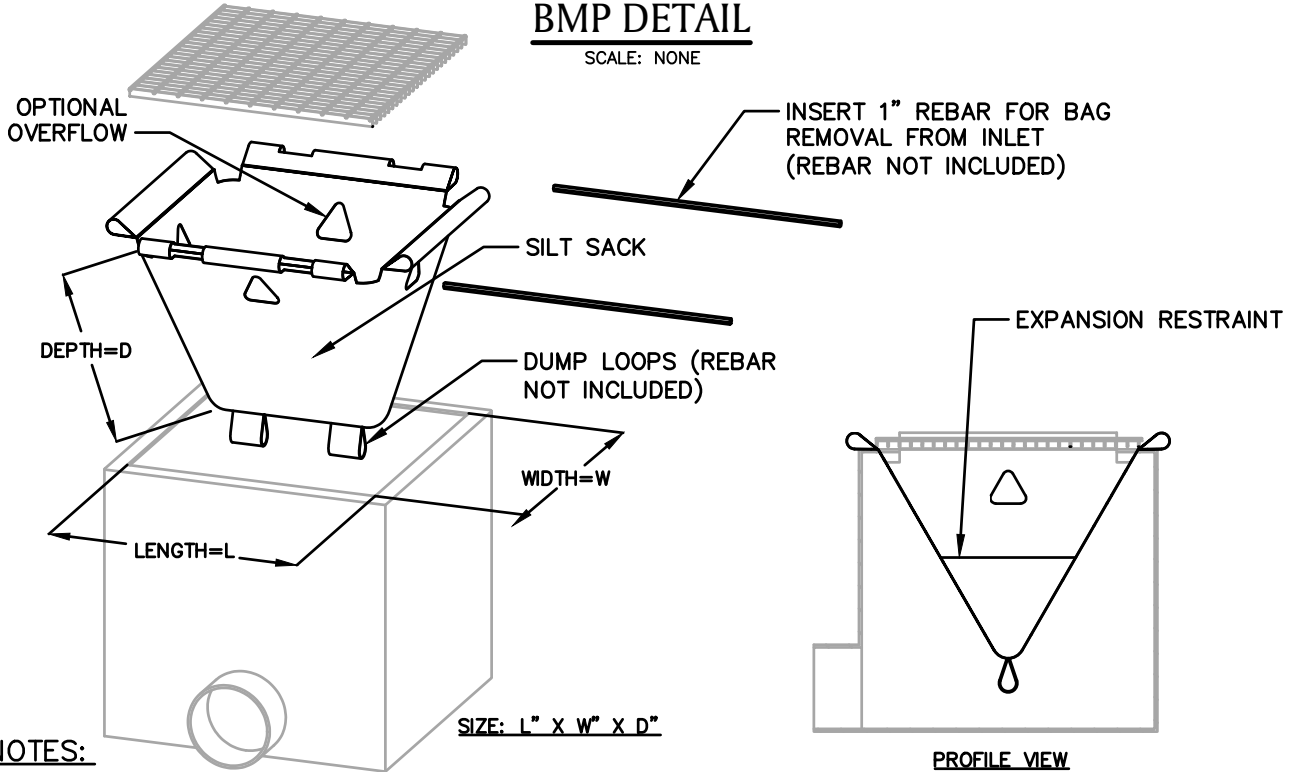
AA-19
CATCH BASIN INLET PROTECTION

SUBJECT
Access, Maintenance and Construction
Best Management Practices

Reference
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES:

1. PRODUCT TO BE SILT SACK OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE USE OF A SILT SACK OPTIONAL OVERFLOW AND OVERALL DIMENSIONS ARE TO BE COORDINATED WITH A NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



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AA-20
SILT SACK *

SUBJECT

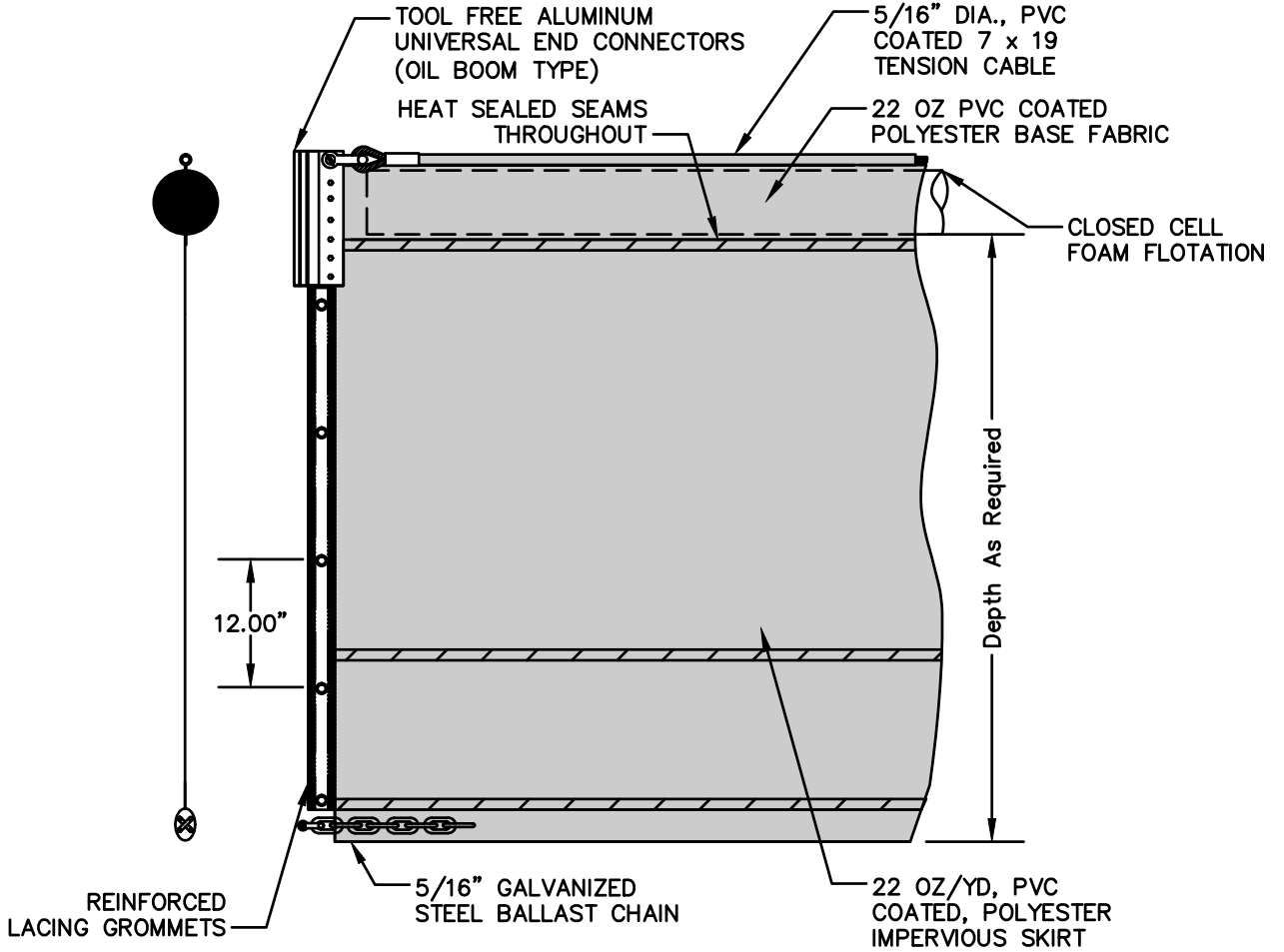
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



BMP PICTURE



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AA-21
TURBIDITY CURTAIN *

SUBJECT

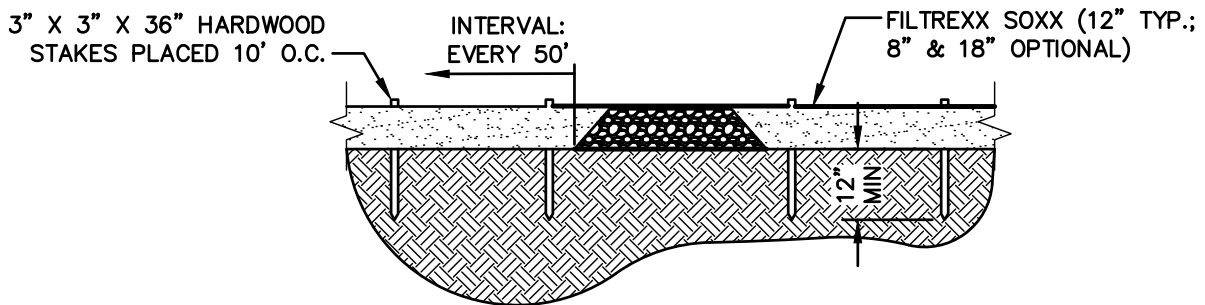
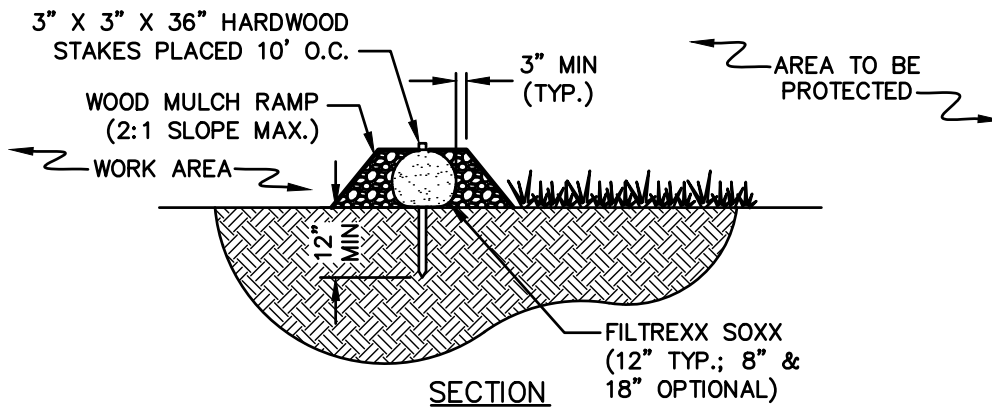
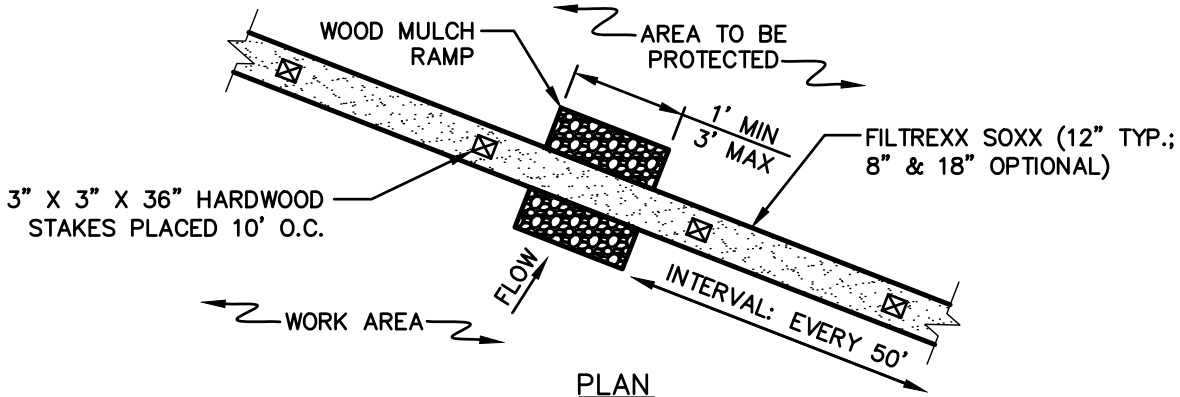
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. NON-MONOFILAMENT CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" - 1/4".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPOSED OF ON-SITE, OR IN ACCORDANCE WITH ENVIRONMENTAL PERMITS AS APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
7. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.

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BMP # AA-22
SILTSOXX AMPHIBIAN & REPTILE
CROSSING #1 (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



SALAMANDER AND SNAKE CROSSING #1

ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

1. SILTSOXX, BY FILTREX INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS, OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

File: Alternate_Mulch_Ramp_Siltsoxx.dwg

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BMP # AA-22
SILTSOXX AMPHIBIAN & REPTILE
CROSSING #1 (2 OF 2)

SUBJECT

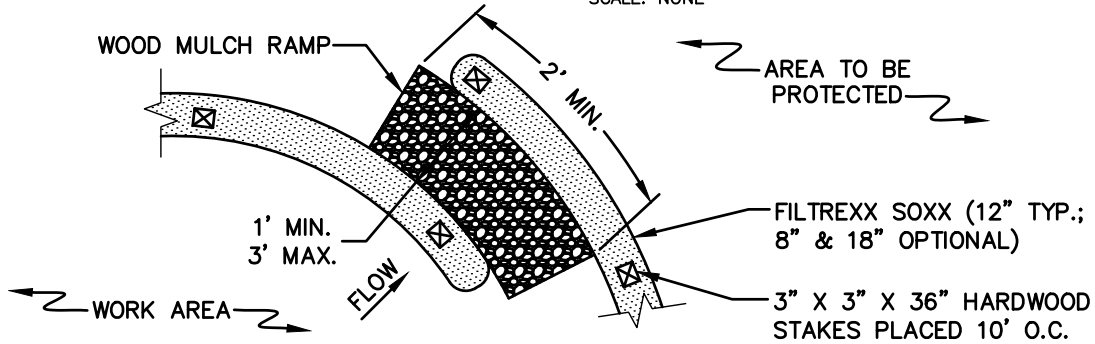
Access, Maintenance and Construction
Best Management Practices

Reference

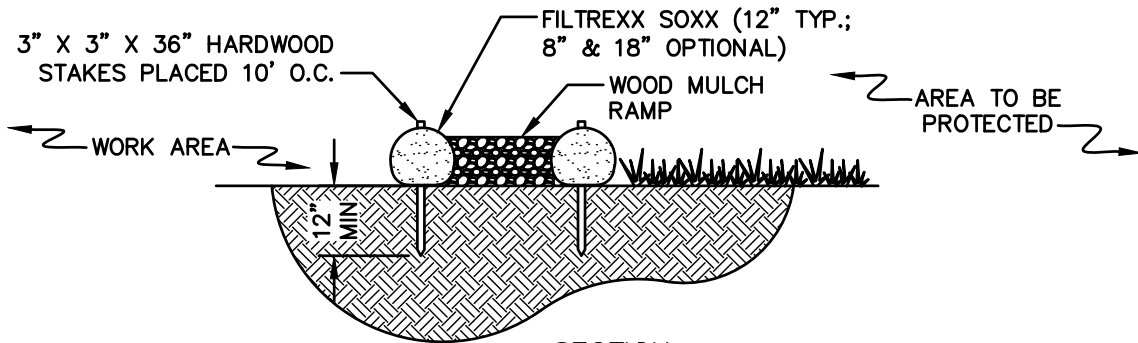
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

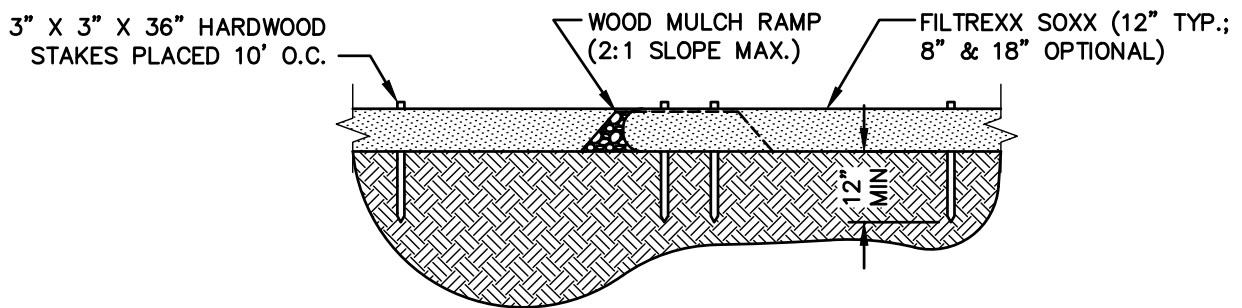
SCALE: NONE



PLAN



SECTION



PROFILE

NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. NON-MONOFILAMENT CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" - 1/4".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPOSED OF ON-SITE, OR IN ACCORDANCE WITH ENVIRONMENTAL PERMITS AS APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
7. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
8. GAPS TO BE SPACED EVERY 50 FT, IF POSSIBLE GIVEN WETLAND PERMIT CONDITIONS.

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**BMP # AA-23
SILTSOXX AMPHIBIAN & REPTILE
CROSSING #2 (1 OF 2)**

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE



SILTSOXX AMPHIBIAN & REPTILE CROSSING #2

ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

1. SILTSOXX, BY FILTrex INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

File: Alternate_Siltsoxx.dwg

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BMP # AA-23
SILTSOXX AMPHIBIAN & REPTILE
CROSSING #2 (2 OF 2)

SUBJECT

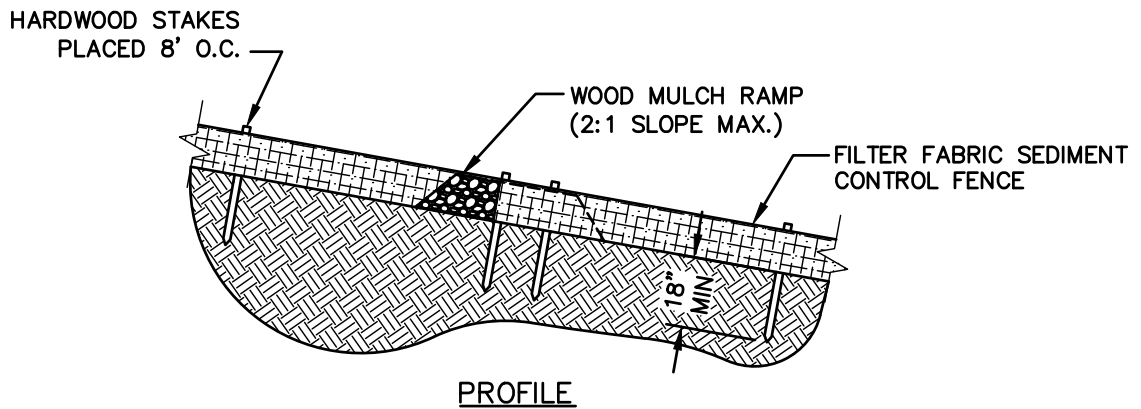
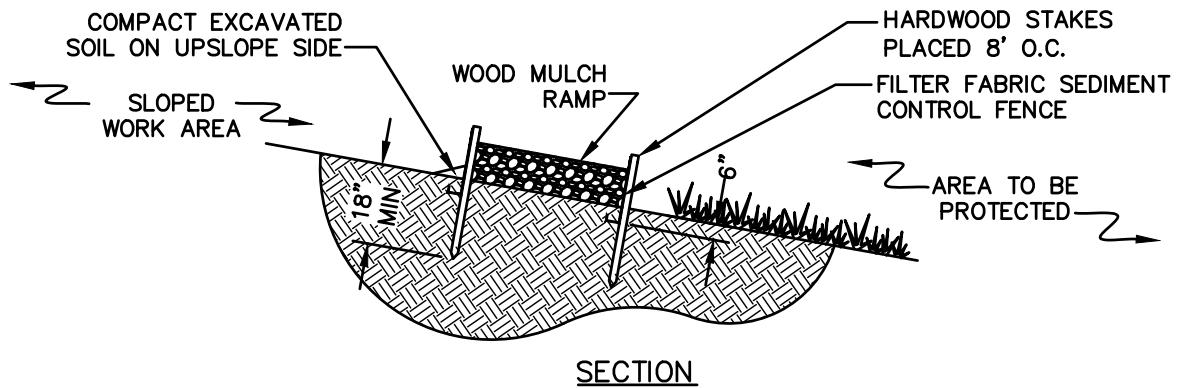
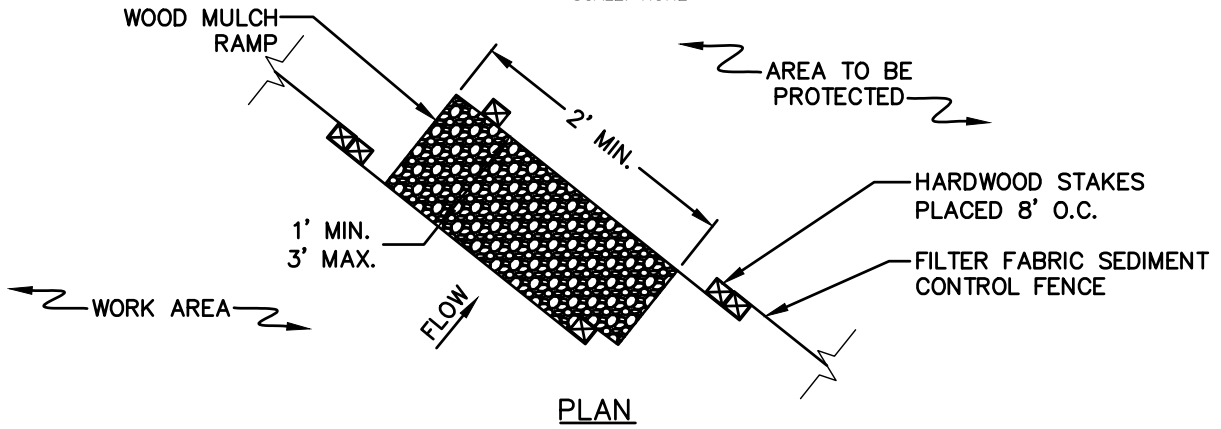
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



NOTES

1. IN AREAS WHERE SLOPES OR RUN-OFF VOLUME PROHIBIT USE OF SILTSOXX, CROSSINGS CAN BE PROVIDED THROUGH TRENCHED SILT FENCE.
2. INTALL SILT FENCE TO SPECIFICATIONS IN EG303 APPENDIX 7 "SEC-2 SEDIMENT CONTROL FENCE."
3. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
4. GAPS TO BE SPACED EVERY 50 FT, IF POSSIBLE GIVEN WETLAND PERMIT CONDITIONS.

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BMP # AA-24
SILT FENCE AMPHIBIAN & REPTILE
CROSSING #3

SUBJECT

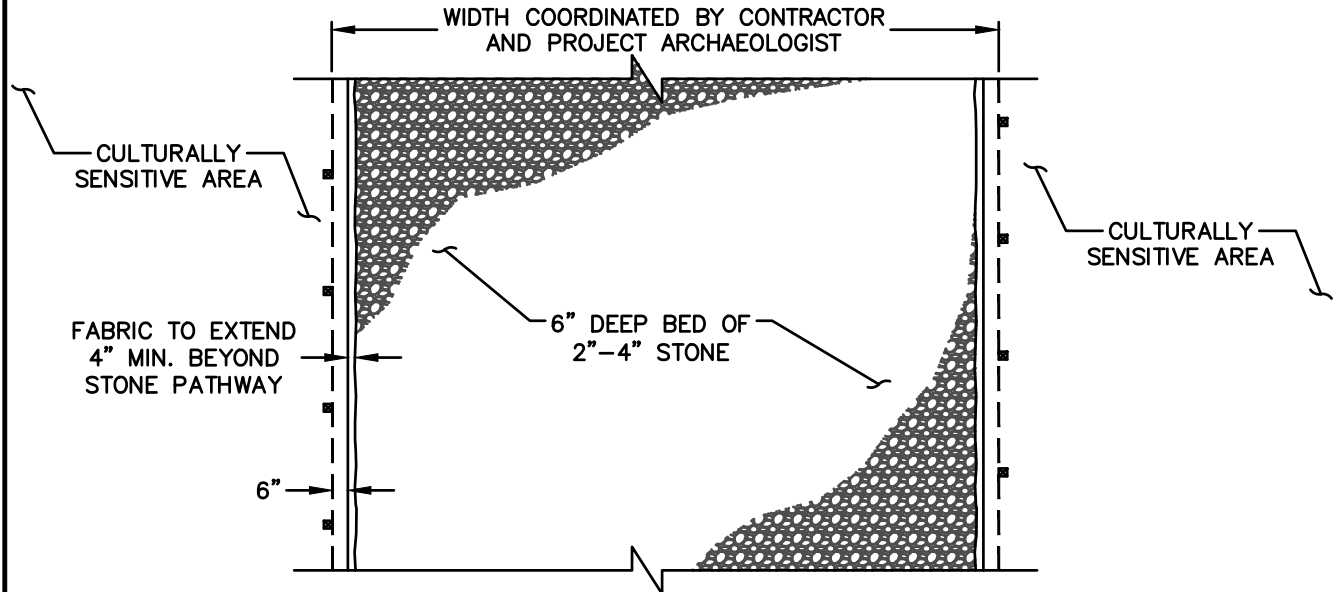
Access, Maintenance and Construction
Best Management Practices

Reference

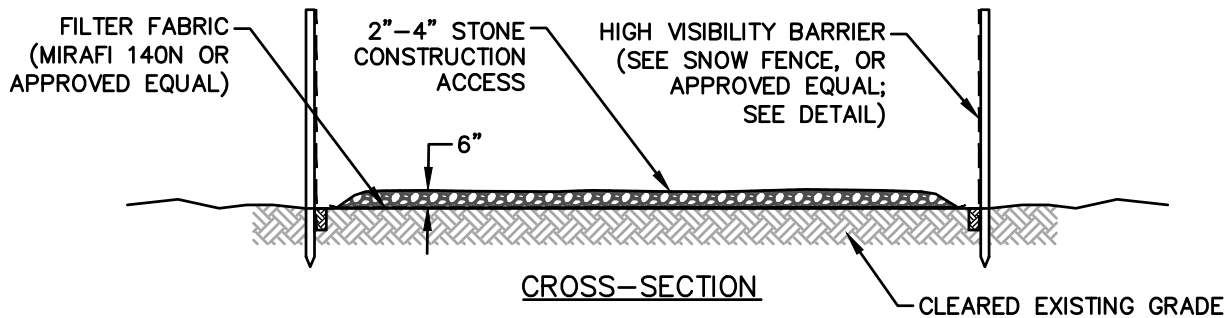
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



PLAN VIEW



CROSS-SECTION

NOTES:

1. ARCHAEOLOGICAL SITE BOUNDARIES, AS DEFINED BY INTENSIVE ARCHAEOLOGICAL SURVEY AND SITE AVOIDANCE AND PROTECTION PLANS, WILL BE DEMARCATED BY STAKING BY THE PROJECT ARCHAEOLOGIST.
2. GEOTEXTILE AND STONE MAY REMAIN IN PLACE FOLLOWING CONSTRUCTION IF PERMANENT PROTECTION IS NECESSARY AND DEPENDENT ON EASEMENT RIGHTS.
3. WHERE APPROVED BY THE PROJECT-SPECIFIC SAPP, CONSTRUCTION MATTING MAY BE ADDED OVER, OR IN PLACE OF, THE FABRIC AND STONE.
4. INSTALLATION AND REMOVAL OF FABRIC AND STONE, EROSION CONTROLS, AND/OR CONSTRUCTION MATTING WILL BE MONITORED BY THE PROJECT ARCHAEOLOGIST AT EACH LOCATION(S).
5. INSTALLATION OF THESE MEASURES WILL BE CONDUCTED WITH LOW-GROUND PRESSURE VEHICLES WHERE FEASIBLE.
6. WHERE REQUIRED BY THE PROJECT-SPECIFIC SAPP, TEMPORARY, HIGH VISIBILITY PROTECTIVE FENCING (E.G., SNOW FENCE OR PLASTIC FENCE) WILL BE ERECTED ALONG THE SITE BOUNDARIES OUTSIDE OF THE WORKSPACE WITHIN THE ROW IN ORDER TO PREVENT VEHICLES FROM TRAVELING THROUGH THOSE SITE AREAS DURING CONSTRUCTION. THE PROTECTIVE FENCE WILL BE POSTED WITH "NO TRESPASSING" SIGNS, SO THAT THE SITES CAN BE AVOIDED BY ALL CONSTRUCTION RELATED ACTIVITIES. THE FENCING WILL BE REMOVED UPON COMPLETION OF THE PROJECT. THE INSTALLATION AND REMOVAL OF FENCING WILL BE MONITORED BY THE PROJECT ARCHAEOLOGIST.

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BMP # AA-25
CULTURAL AVOIDANCE (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)


BMP PICTURES



File: Cultural_Avoidance.dwg

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BMP # AA-25
CULTURAL AVOIDANCE (2 OF 2)

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APPENDIX 5
CERTIFICATION FORM FOR INVASIVE SPECIES CONTROL

Certain permit conditions, therefore a Condition of Contracts for the Prime Contractor, any Subcontractors, and any equipment or mat vendors for **National Grid Projects** shall be required to Certify their equipment⁷ {each piece of equipment used on site} as 'clean'⁸.


_____ (name of firm) hereby Certifies that
 _____ (make, model, and/or type)
 _____ (equipment ID tag or #) meets the following

1. before entry on to the job site, has been sufficiently cleaned to remove all accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species; and
2. that the above piece of equipment has neither been off-loaded nor operated in the interval between cleaning and delivery to the jobsite.
3. that equipment deployed in areas of invasive species (as identified in project plans) shall be cleaned prior to redeployment.

_____ (signed) _____ (dated)
 _____ (printed name) _____ (title)
 _____ (Firm)

The signed original of this form {one for each piece of equipment (or lot⁹ of mats)} is to be given to the NG Construction Supervisor assigned to the project.

⁷ Equipment may include, but is not limited to bulldozers, excavators, backhoes, bucket trucks (tracked or wheeled), pulling equipment, concrete trucks, compressors, drilling equipment, and mats (composite, wood, or other materials).
⁸ With regard to invasive species, the definition of clean means free of accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species.
⁹ Lot of mats is the number of mats that may be transported by one forwarder/truck at a time.

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APPENDIX 6

SNOW DISPOSAL GUIDELINES

Finding a place to dispose of collected snow poses a challenge. While we are all aware of the threats to public safety caused by snow, collected snow that is contaminated with road salt, sand, litter, and automotive pollutants such as oil also threatens public health and the environment.

As snow melts, road salt, sand, litter, and other pollutants are transported into surface water or through the soil where they may eventually reach the groundwater. Road salt and other pollutants can contaminate water supplies and are toxic to aquatic life at certain levels. Sand washed into water bodies can create sand bars or fill in wetlands and ponds, impacting aquatic life, causing flooding, and affecting our use of these resources.

There are several steps that should be taken to minimize the impacts of snow disposal on public health and the environment.


- **DO NOT** dump snow into any water body, including rivers, the ocean, reservoirs, ponds, or wetlands. In fact, a buffer of at least 50 feet between any snow disposal area and any the high-water mark of any surface water should be kept. A silt fence or equivalent barrier should be securely placed between the snow storage area and the high-water mark. In addition to water quality impacts and flooding, snow disposed in surface waters can cause navigational hazards when it freezes into ice blocks.
- **DO NOT** dump snow within a wellhead protection area (e.g., a Zone II), in a high or medium-yield aquifer, or within 75 feet of a private well, where road salt may contaminate water supplies. **Ask an Environmental Department representative for guidance in determining if a proposed disposal area is located within one of these sensitive areas.**
- Avoid disposing of snow on top of storm drain catch basins or in storm water drainage swales or ditches. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.
- All debris in a snow storage area should be cleared from the site and properly disposed of no later than May 15 of each year the area is used for snow storage.

Under extraordinary conditions, when all land-based snow disposal options are exhausted, disposal of snow that is not obviously contaminated with road salt, sand, and other pollutants may be allowed near (within 50 feet) or even in certain water bodies under certain conditions.

In these dire situations, **notify the Environmental Department** so that the local Conservation Commission and the appropriate MassDEP Regional Service Center (in MA), RI DEM Office of Water Resources – RIPDES

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Program (in RI), NH Department of Environmental Services – NHDES (in NH) and VT Department of Environmental Conservation - VT DEC (in VT) can be contacted before disposing of snow in a water body.

In emergency situations and after consulting an Environmental Department representative the following guidance should be followed:

- Dispose of snow in open water with adequate flow and mixing to prevent ice dams from forming.
- Do not dispose of snow in saltmarshes, vegetated wetlands, certified vernal pools, shellfish beds, mudflats, drinking water reservoirs and their tributaries, wellhead protection areas, or other environmentally sensitive areas.
- Do not dispose of snow where trucks may cause shoreline or stream bank damage or erosion.

Massachusetts Five Year Vegetation Management Plan 2019-2023



nationalgrid

Submitted November 7 2018

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1. INTRODUCTION

The purpose of this Vegetation Management Plan (VMP) is to outline the National Grid USA Electric Companies (hereafter referred to as National Grid)¹ five year plan for managing vegetation in compliance with 333 CMR 11.00 (Appendix 1).² Removing incompatible vegetation is necessary on transmission and distribution rights-of-way, and around associated structures and facilities to ensure safe, reliable delivery of electric service. Tall growing tree species must be prevented from growing into or falling onto the lines. Dense woody vegetation, vines, noxious³ (invasive plant species, nuisance and poisonous vegetation), and all vegetation that interferes with access must be removed from around structures, access roads and anywhere in which they prevent access to the rights-of-way for inspections, maintenance, repairs and in emergencies.

National Grid manages approximately 20,000 acres and 1,500 miles of rights-of-way within the Commonwealth of Massachusetts through the municipalities listed in Appendix 2. These rights-of-way extend from the western border of the Commonwealth through Worcester County, the Merrimack Valley, the North Shore, and the Southeast down through to the Attleboro area and Somerset. They traverse all types of terrain from steep mountainous topography to rolling hills and level lowlands, and from remote, relatively inaccessible locations right through high density population centers.

Taking this variety of landscape conditions into consideration, National Grid applies an Integrated Vegetation Management (IVM) approach to controlling vegetation on its rights-of-way. IVM is the utility variation of Integrated Pest Management (IPM) in which the pest is

¹ National Grid companies with rights-of-way in Massachusetts include Massachusetts Electric Company, New England Power Company and New England Hydro Transmission Electric Company.

² National Grid's VMP takes into account not only 333 CMR 11.00 and Chapter 132B, but all applicable state and federal regulations that mandate the management of utility rights-of-way including but not limited to: all pertinent clauses in Chapter 85 of the Acts of 2000; MESA; MGL c. 131 A and 321 CMR 10.00; 310 CMR 10.00 and 310 CMR 22.00; 310 CMR 40.0000; applicable Federal Energy Regulatory Commission standards including NERC Standard FAC-003-1, Commissioner Order 693, FAC-003-2 (effective July 1, 2014), and all applicable Federal Occupational Safety and Health Act, Department of Transportation and Department of Environmental Protection regulations.

³ "NOXIOUS WEED.—The term "noxious weed" means any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment." (PUBLIC LAW 106-224—JUNE 20, 2000, TITLE IV—PLANT PROTECTION ACT).

incompatible vegetation. IPM/IVM is the conscientious use of appropriate management techniques to control pests in a program designed to minimize the risk of unreasonable adverse effects on human health and the environment. National Grid's IVM program brings together a combination of treatment methods and an understanding of the variety of New England ecosystems and the built environment.

2. THE PRIMARY GOAL AND OBJECTIVES OF THE VMP

The primary goal of this VMP is to outline the standard operating procedures for vegetation management operations on National Grid's rights-of-way. Its purpose is to document National Grid's IVM Program standards, practices and procedures.

The VMP is intended to provide a basic source of information for state and municipal officials and any interested parties regarding National Grid's vegetation management program. It also provides guidance for the technicians contracted by National Grid to carry out the vegetation management treatment program.

The following items are, therefore, individual objectives that must be taken into consideration as part of the primary goal of National Grid's vegetation management program:

- To ensure the reliable delivery of electric service to our customers;
- To maintain an optimum three to five year maintenance cycle for all rights-of-way⁴;
- To ensure that vegetation management operations are conducted in a safe, effective manner and in conformity with federal and state laws, regulations, and if applicable, permit conditions;
- To treat sensitive areas listed in 333 CMR 11.04 according to regulatory and National Grid policy as areas that require special consideration during vegetation management operations;

⁴Maintenance cycles are the years between treatments.

- To allow for unplanned tasks for which all precautions are taken to utilize the correct treatment methods and to protect sensitive areas (construction, restorations, hazard tree removal, etc.);
- Following the procedures in 333 CMR 11.05(4)(d), to maintain the flexibility necessary to accommodate unique situations and the need for more appropriate techniques as they arise (in accordance with regulations, scientific advances, operational experience and/or comments from municipalities, state agencies & contractors);
- To have a National Grid representative respond quickly to any questions or complaints from the public and/or governmental agencies that relate to rights-of- way vegetation management.

3. RIGHTS-OF-WAY VEGETATION AND IDENTIFICATION OF INCOMPATIBLE TARGET VEGETATION

More compatible non-target vegetation live on electric rights-of-way than incompatible target vegetation. In fact, National Grid's rights-of-way are one of the primary remaining early successional ecological communities⁵ in New England. These low growing plant communities (compatible vegetation) help discourage the establishment of incompatible vegetation, do not hinder access and do not generally interfere with the lines. Plant species that are generally encouraged on the rights-of- way include herbaceous growth and shrubs that mature less than 12 feet in height, unless due to their location or attributes they interfere with the function of the rights-of- way. As a result, many plant and animal species use our rights-of-way as their homes, feeding grounds or nurseries. This early successional landscape, however, is not, by nature, stable; it is instead the sustained result of the IVM program established on National Grid's rights-of-way in the late 1960's.

⁵ A simplified definition of early successional ecological communities is low growing vegetation including grasses, herbaceous and shrub species and the wildlife species that inhabit them.

Vegetation that obscures the right-of-way corridors and/or grows tall enough to interfere with the lines is considered incompatible vegetation and must be removed as targets. Incompatible vegetation includes trees and limbs, tall growing shrubs, vegetation growing around substations, structures, access roads, gates, and anywhere vegetation impedes access to the rights-of-way and equipment.

Trees

The primary incompatible plant species are trees, generally defined as woody plant species that mature at heights exceeding 15 feet. Trees must be removed or controlled within the cleared width and along the edges of National Grid's rights-of-way because they are capable of growing tall enough to grow into or fall onto the lines causing electric service outages. Examples of incompatible vegetation include, but are not limited to, maples, oaks, ash, cherries, birches, beeches, spruce, hemlocks and pines.

In rare isolated instances trees may be left where the electric lines are high enough off the ground so that mature trees will not interfere with the operation of the line. Also, those species that are under the purview of the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife (NHESP) will be treated on a case by case basis.

Woody Vegetation (Non-Tree Species)

Certain categories of non-tree species are also considered incompatible vegetation, some due to their location and others because of their nature. All woody vegetation on/or encroaching upon existing roads or pathways or immediately adjacent to line structures or equipment will be controlled to provide adequate access to structures, equipment and along the rights-of-way. These include shrubs and vines, including, but are not limited to, Viburnum, Mountain Laurel, Bush Honeysuckle, Grape Vines, Virginia Creeper, etc.

Plant species that pose an environmental or safety problem will be removed whenever practical. The categories of these plant species types that cause safety problems are noxious vegetation

plant species including nuisance and poisonous plant species that have heavy thorn growth or dermal toxicity and may create hazards for people working on or traversing the right-of-way. Poisonous vegetation poses a health hazard to National Grid personnel, contractors and the public-at-large, which can lead to increased incidences of first aid and OSHA recordable incidents. Mechanical methods do not reduce the spread of these populations, particularly Poison Ivy and Poison Sumac, therefore National Grid plans to use herbicides to spot treat poisonous plants at sites under its rights-of-way identified as having a high risk of posing a health hazard.

Other types of noxious and nuisance vegetation poses a risk to the safety and health of all individuals working on or traversing a right-of-way and can further impede a rapid response in an emergency. These plants have heavy thorns, dense foliage and/or impenetrable stems; examples include, but are not limited to, federal and Massachusetts classified noxious vegetation such as Multi-floral Rose, Common & Glossy Buckthorn, and Blackberries, as well as nuisance vegetation such as Hawthorne, Greenbrier and dense populations of grapevines.

Invasive Plant Species

Noxious vegetation also includes invasive plant species that create hazards for the environment. Invasive plant species have become an increasing concern throughout Massachusetts in areas that include rights-of-way corridors where they can spread rapidly and then move into the adjacent landscape. According to the Massachusetts Invasive Plant Advisory Group, "Invasive plants" are non-native species that have spread into native or minimally managed plant systems in Massachusetts.

These plants cause economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems...."⁶ Some examples of invasive plant species commonly found on rights-of-way include, but are not limited to, Japanese Knotweed, Multi-flora Rose, Oriental Bittersweet and Glossy Buckthorn (some of these also fit the noxious vegetation category).

⁶ <http://www.massnrc.org/mipag/invasive.htm>.

Other

If no permanent access route exists within a right-of-way, a pathway may be created during the treatment cycle and maintained in a suitable location by managing all woody vegetation within the selected route. Woody vegetation must be removed in these areas to ensure access to and within the right-of-way and line structures for safe, efficient inspection, maintenance and emergency operations. The pathway in general is no larger than 15 feet wide and the woody vegetation is either removed and/or treated with herbicides.

To ensure the accurate identification of incompatible and compatible vegetation, all vegetation management contractors are required to supply personnel familiar with the vegetation typically found growing on utility sites.

4. INTEGRATED VEGETATION MANAGEMENT AND RATIONALE FOR USE

National Grid has one of the oldest IVM programs in the Commonwealth of Massachusetts, adopting this multi-faceted approach to rights-of-way vegetation management in the late 1960's. Following the "Purpose" of 333 CMR 11.00, National Grid has, and continues to utilize, an IVM program that "...minimizes our impact on human health and the environment while allowing for the benefits to public safety provided by the selective use of herbicides."

National Grid's approach relies on reducing the amount of herbicides used by

- i. using selective herbicides/application techniques
- ii. timing applications for maximum effect
- iii. avoiding fixed application schedules
- iv. using mechanical control techniques where appropriate
- v. encouraging low growing plant communities.

These techniques are applied to individual rights-of-way on a three to five year treatment cycle when incompatible vegetation averages heights of six to ten feet and low to medium average densities.

National Grid's IVM program actually begins with understanding the concept of ecological succession. Plant life is by its nature dynamic, it is, however, governed by relatively predictable

processes of change in composition or structure known as succession. In New England, succession strives towards the climax forest, but is interrupted by natural or man-made disturbances both intentional and accidental, which can lead back to earlier stages. National Grid's goal is to encourage early successional landscapes including wetlands, vernal pools, heaths, barrens, scrub land, fields and meadows, all of which, if left alone, are dynamic; all of which dominate the landscape of utility rights-of-way under an IVM program and all of which are ideally suited to the requirements of the right-of-way. An additional benefit to this management strategy is that these early successional communities are generally populated by diverse, well-dispersed species that include many of New England's plant, animal and insect species, including many of those that are threatened or endangered.

IVM, as applied to electric utility rights-of-way, therefore is an environmentally responsible means of combining biological, chemical, and mechanical treatment methods (mowing, selective pruning, and hand-cutting) with an understanding of the stages of ecological succession and interspecies competition. The resulting right-of-way corridor is dominated by vegetation below economically damaging heights that could otherwise interfere with the delivery of electric service.

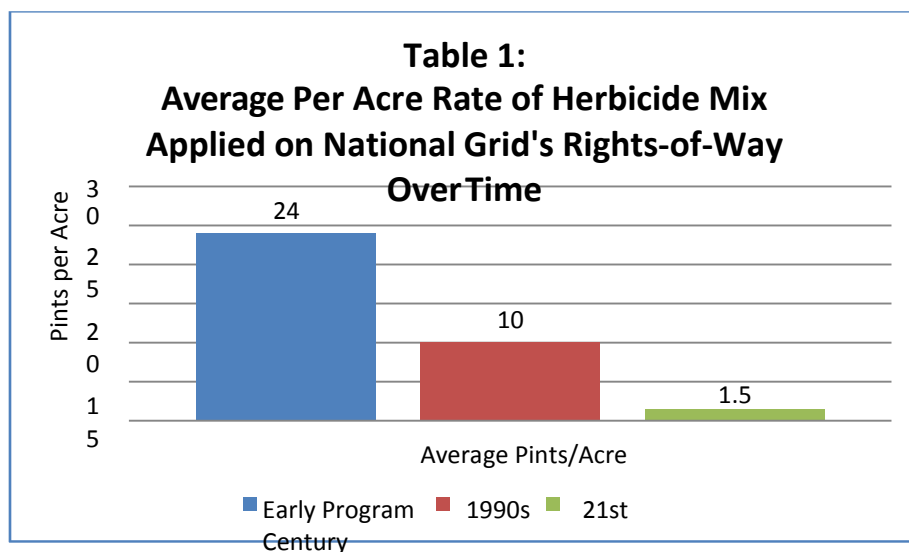
IVM has many variations, but here in New England, where the practice first began, IVM is scheduling treatment crews to target incompatible vegetation as selectively as possible and then letting early successional ecological communities help maintain compatible vegetation between treatment programs. In this interim period competition (for light, moisture, and nutrients), wildlife depredation (browsing/feeding) and other ecosystem processes inhibit the germination and growth of incompatible woody vegetation, primarily trees.⁷

⁷Yahner. "Wildlife Response to More than 50 years of Vegetation Maintenance on a Pennsylvania U.S., Right-of-Way": 123; Christopher A. Nowak & Benjamin D Ballard. "A Framework for Applying Integrated Vegetation Management on Rights-of-Way." *Journal of Arboriculture* 31(1) (January 2005): 28-37; Richard H. Yahner "State Game Lands 33 Research and Demonstration Project—57 years of Continuous Study on the Shawville to Lewiston 230-kV line of First Energy (Penelec). 2009: 9; Yahner. "2009 Annual Report to Cooperators. Green Lane Research and Demonstration Project: 23 Years of Continuous Study." (2009): 8; Yahner. "Wildlife Response to More than 50 years of Vegetation Maintenance on a Pennsylvania U.S., Right-of-Way." *Journal of Arboriculture* 30(2) (March 2004): 123 United States Environmental Protection Agency. "Fact Sheet: Integrated Vegetation Management." EPA 731-F-08-010 (Oct. 2008).

⁸National Grid recognizes that in addition to using the stages of ecological succession and interspecies competition to limit the germination and growth of incompatible vegetation, there are direct biological applications techniques. For example, the release of two leaf feeding beetles (*Galerucella calmariensis* and *G. pusilla*) can help control Purple Loosestrife (*Lythrum salicaria*). While National Grid does not rule out the potential use of these application techniques in limited areas, with approximately 20,000 acres of treatment area and the composition of our primary target species, they are not currently a significant part of our IVM program.

These biological processes or natural controls⁸ lower the dependence on chemical and mechanical controls. Inhibiting the process of plant succession, however, requires the use of all three components of IVM. All three depend upon the others in a continuous cycle that employs the unique advantages of each. Without combining all three, incompatible plant species develop increased stem densities that require more intense control measures. Combing all three, therefore lengthens the time between management cycles, reduces the amount of herbicide applied per acre and limits the need for intense mechanical controls.

Narrow one-dimensional management techniques, while frequently less expensive initially, decrease biodiversity and increase the impact of long-term vegetation management activities on the environment. For example, a mechanical only program cannot control the roots of incompatible vegetation resulting in increased stem densities of re-sprouting vegetation that grows at a rapid rate. Likewise, there are areas of a utility right-of-way that cannot be treated with herbicides



Following National Grid’s IVM approach has, over time, significantly reduced the per-acre application rate of herbicide formulations at National Grid (see Table 1).⁹ In the early stages, when herbicide applications first replaced a pure mechanical program, our rights-of-way were dominated by high stem densities of incompatible tree species. As a result, the average

⁹ National Grid Transmission Forestry Herbicide Use Summary Records.

rate per acre of applied herbicide formulations was approximately three gallons (24 pints). Around, fifteen years ago, as years of selective herbicide applications sustained a diverse desirable vegetation cover, the average rate per acre was approximately 1-1½ gallons (8-12 pints) per acre. Currently, the average rate is approximately 0.25 gallons (1-4 pints) per acre. Studies in New York have documented similar reductions in herbicide use through stable plant community management.¹⁰

National Grid will continue to monitor the use of herbicides on its rights-of-way to evaluate the trends in herbicide application rates. This work will be monitored through the use of Contractor herbicide use reports and National Grid field inventories. In addition, National Grid has recently developed a software program that contractors will begin to utilize in the field to record their herbicide use on National Grid rights-of-way.

National Grid's IVM program also recognizes and manages instances in which landscape changes prescribe the IVM techniques. Control methods are adapted or limited to suit the cultural management situation. These are areas of a right-of-way in which geologic, geographic, climactic, environmental and legal factors along with economic, agricultural, social and recreational uses of the landscape affect the application of IVM management techniques. Treatment methods are determined by soil type, moisture levels, elevation, density and growth rates; land use patterns such as golf courses, inhabited areas, Christmas tree farms, active pasture and crop lands, or where individual alternate control agreements are in place with landowners. These landscapes limit or alter the applied treatment methods. For example, in neighborhoods, incompatible plant species might not be present in yard areas but may still need to be removed from structures.

¹⁰ C.A. Nowak, C.A. and L.P. Abrahamson, "Vegetation Management on Electric Transmission Line Rights-of-Way in New York State: The Stability Approach to Reducing Herbicide Use", Proceedings of the International Conference on Forest Vegetation Management, Auburn University, April 1993.

By the selective applications and judicious use of herbicides in combination with mechanical controls and an understanding of ecological succession, National Grid's rights-of-way are meeting environmental and management goals.

Taking a multi-faceted approach minimizes the disadvantages and maximizes the benefits of each IVM component, thereby reducing the environmental impact and the financial cost of vegetation management while simultaneously increasing the overall effectiveness of the program.

5. VEGETATION MANAGEMENT AND OPERATIONAL GUIDELINES

National Grid retains independent contractors for all vegetation management treatment activities and requires that these contractors comply with all applicable state and federal laws and regulations, and National Grid vegetation management specifications. Furthermore, contractor performance and compliance with this VMP is monitored and evaluated by National Grid Foresters.

Vegetation Management Guidelines

National Grid's IVM program is applied to the full width of each right-of-way to remove or control all incompatible vegetation. Vegetation management activities must result in 100% control or removal of all incompatible target plant species greater than or equal to six feet in height and a minimum of 90% control or removal of all incompatible vegetation less than six feet in height.

With a few exceptions, all incompatible species will be removed or controlled during a treatment operation. This includes all woody vegetation and vines growing on or encroaching upon access roads, gates, or on or within ten feet of guys, poles and towers within the cleared width of the right-of-way. Treatments will also extend around the perimeter of substations following all sensitive area restrictions.

The only exceptions are trees in or edging yards, visual screens and trees or shrub species

specified by NHESP in the Priority Habitat of state-listed species. All exceptions, however, must be maintained at an acceptable height or condition that will not exceed minimum vegetation clearance distances from the lines before the next maintenance cycle.

National Grid uses two types of visual screens, shrub and tree/shrub, which screen the general public from views of structures and substations. They are maintained at sites where, in the opinion of National Grid, people may find the view of structures or substations objectionable. These sites include, but are not limited to, locations where rights-of-way cross roads, recreational areas, and inhabited areas.

Sensitive areas will be treated per 333 CMR 11.04. Vegetation management operations on such sites are designed to prevent any unreasonable adverse environmental effects. These no-spray and limited spray areas will be maintained using the appropriate control methods (see Table 1 & Appendix 7).

Conifers are generally not treated with herbicides since most species do not re-sprout. One exception to this general guideline is pine species that do re-sprout, particularly Pitch Pine, which may be treated on a limited basis with herbicides. Another exception is where White Pine regeneration has seeded in large thick carpets and mowing might be more destructive than an herbicide application.

In cases where large areas of high density incompatible species have exceeded maximum herbicide treatment heights, it may be more practical to do a mechanical treatment followed in one or two growing seasons by an herbicide treatment to obtain effective control.

Right-of-way access will be through the use of established roadways whenever possible. The contractor will obtain permission to enter a right-of-way by any other means in advance.

Unreasonable site damage or destruction during any phase of the vegetation management operation by the contractor, his agents or employees, must be repaired immediately to the satisfaction of National Grid; National Grid will determine what constitutes unreasonable site damage.

General Operational Guidelines

The National Grid Forester will inform the contractor(s) which rights-of-way will be treated, the range of treatment dates and the possible methods, materials and mixing rates. National Grid will supply treatment restrictions data, maps and written instructions outlining any special treatment considerations or instructions for each right- of-way. No work will be done until the contractor has the appropriate data, permits, restriction lists, mixing rate instructions and licensed staff.

The contractor must provide:

- Appropriately licensed or certified supervisors who understand all aspects of the contracted treatment and who are responsive to the guidance of NationalGrid;
- Supervisors who effectively manage treatment crews to ensure the satisfactory completion of the contract;
- Supervisors who effectively communicate with the public;
- Experienced and/or trained workers, who are appropriately licensed or certified;
- Workers who conduct themselves professionally at alltimes;
- The appropriate equipment maintained at the highest practical level of efficiency and effectiveness;
- Appropriately calibrated herbicide applicationequipment;
- Equipment in good visual and working condition;
- Completed paperwork.

The contractor must:

- Comply with all applicable federaland state laws and regulations;
- Have a copy of this VMP;
- Have all treatment crews carry a copy of the current Yearly Operational Plan (YOP);
- Have all treatment crews carry National Grid right-of-way maps.

In conclusion, vegetation management operations must be conducted according to this VMP and the written instructions of National Grid. Failure to do so is grounds for removal of the crew from the treatment site and termination of the vegetation management contract.

6. VEGETATION MANAGEMENT CONTROL METHODS

Mechanical and chemical controls work together to support the viability of early successional communities, therefore, National Grid utilizes a combination of hand cutting, mowing, selective pruning, selective foliar treatments, low volume basal treatments and cut stump treatments. Based on a three to five year cycle,¹¹ the treatment methods used on any given right-of-way are selected based on timing, site sensitivity, species composition and density, site access, and topography.

National Grid inspects rights-of-way for incompatible vegetation density, height and composition. A right-of-way is then scheduled for treatment when incompatible vegetation height averages six to ten feet or densities reach low to moderate levels.

These inspections are important because although treatment cycles should remain relatively consistent with the use of our IVM program, short term changes in growth conditions, site disturbances or the effectiveness of past treatments may affect the schedule on individual rights-of-way.

The advantage of a flexible IVM program is the ability to apply the appropriate treatment methods to meet the conditions of individual rights-of-way. As the sole means to control vegetation, mechanical controls are a short-term solution. With the exception of most conifer species, cut vegetation re-sprouts, resulting in significantly thicker stem densities. Selective herbicide application treatment methods effectively remove vegetation that would otherwise compete with and dominate the desired early successional ecological communities. In some areas, however, mechanical controls are the preferred method, sometimes in combination with the appropriate herbicide treatment method: on vegetation over 12 feet tall; on non-sprouting conifers (with exceptions); in no-spray sensitive areas; in visual screens; around structures; on access roads; in areas of thick, impenetrable vegetation, and where large areas of high density incompatible species exceed maximum herbicide treatment heights.

¹¹ Extending treatment cycles results in average tree heights that exceed ten feet and high densities. This requires the use of more herbicide to get proper coverage of the resulting larger tree crown area. Since the coverage is more difficult on taller trees, it increases the chance of improper coverage, off-target drift and unsatisfactory results. Deferring treatment even one year beyond their optimum treatment cycle can result in an increased herbicide use of over sixty percent (National Grid Transmission Forestry Herbicide Use Summary Records).

Mechanical Control Methods

Hand Cutting

Hand cutting is the mechanical cutting of incompatible vegetation using chain saws or brush saws, loppers or hand pruners:

- Hand cutting may be conducted at any time of the year;
- Incompatible vegetation is cut as close to the ground as practical;
- Slash from the operation is cut and scattered so as to lay as close to the ground as practical, but not exceeding two feet in height.

Hand cutting is used to protect sensitive areas; around structures, gates and access roads; to control incompatible vegetation greater than 12 feet in height; where herbicide use is prohibited by regulation or easement restriction; on non-sprouting conifer species greater than two feet in height, and on sites where terrain, site size or sensitivity renders mowing impossible or impractical.

Mowing

Mowing is the mechanical cutting of vegetation using large brush mowers mounted on rubber tired tractors or tracked vehicles:

- Mowing may be used at any time of the year except when deep snow precludes operations;
- Selection of specific equipment is based on terrain, vegetation size and equipment availability;
- Mowing is restricted by steep slopes, rocky terrain, obstructions, wet sites with deep, soft soils, and debris on the right-of-way.

Mowing is used on sites where herbicide use is prohibited by regulatory or easement restriction, where a large number of the stems of incompatible species have exceeded maximum control heights, where access is impeded by high woody vegetation density and access is required in the short term, and where terrain, site size and sensitivity permit the efficient use of the equipment.

Selective Pruning

Selective pruning is the mechanical removal of the tops or encroaching limbs of tall-growing tree species to prevent them from growing into, or falling onto, the lines:

- Selective pruning may be done at any time of the year;
- Pruning will be accomplished using aerial lifts mounted on trucks, skidders or tracked vehicles or, if terrain or obstructions prevent equipment access, by climbing crews.
- Slash will be disposed of by dicing, chipping or piling, at the discretion of National Grid:
 - Slash will not be left in waterways, trails or roads, or in such a manner that would permit it to wash into these areas;
 - The placement of cut woody vegetation must comply with applicable State Fire Marshall's regulations;
 - Slash from yards or recreational sites will be chipped or moved to an adjacent area or removed;
 - Slash will be piled in isolated areas or windrowed in parallel lines along the right-of-way in piles that should not exceed two feet in height and that do not obstruct access along or to the right-of-way;
 - Dicing will be accomplished by cutting the slash in pieces so that it lies as close to the ground as practical;
 - All slash and debris of cherry species will be removed immediately after treatment in active pastures to prevent any harm to livestock.
- Chipping is used when dicing and/or piling are prohibited or impractical:
 - Wood chips will be removed where required;
 - When left on site, wood chips will be scattered uniformly over the site at depths not exceeding four inches or piled in isolated areas;
 - No chips will be left in wetlands.

This method is used in maintaining visual screens in the limited areas where tree screens are desired and selective removals are not practical; on individual state or town regulated road crossings where it is required or practical; along the edge of rights-of-way where pruning will reduce or eliminate the threat of outages, and to provide landowners with a viable alternative

to the otherwise mandatory removal of trees for electric line maintenance and integrity that are aesthetically desirable to the property owner.

Chemical Controls

Herbicide applications include foliar, basal, cut stump surface treatments, dormant stem treatments, cut-stubble treatments, and tree growth regulators. Herbicides are applied as mixtures consisting of herbicide formulation(s), adjuvants, carriers and additives. The timing of herbicide applications, materials, and mixture rates will be listed in National Grid's YOP, twenty-one day notice letter and/or forty-eight hour newspaper notice as required under 333 CMR 11.06 and 11.07 and Chapter 85 of the Acts of 2000, Section 10 (see Appendices 1 & 4). National Grid's first choice is to use herbicides on the *Sensitive Area Materials List* administered by the Massachusetts Department of Agricultural Resources (MDAR).¹² If the situation is appropriate, National Grid, however, reserves the right to use other EPA and Massachusetts approved herbicides, following all restrictions in 333 CMR 11.04. The National Grid Forester(s) will further specify to the treatment crews the particular materials and mixture rates for individual rights-of-way according to conditions, timing of the treatment(s), the YOP and manufacturer's labels. Treatment crews will not deviate from National Grid's specifications without the approval of the Forester(s).

Individual herbicides have different levels of effectiveness on incompatible vegetation and under different conditions. No herbicide is equally effective on all plant species and certain herbicides are more effective on certain plant species than others. National Grid selects the herbicide or combination of herbicides in conjunction with the appropriate treatment method to obtain the most effective control on each right-of-way.

¹² *Sensitive Area Materials List*: <https://www.mass.gov/service-details/rights-of-way-sensitive-area-materials-list>

Individual herbicides and treatment methods also have distinctive physical effects and environmental behaviors. For example, certain herbicides or treatment methods cause foliar brownout while others do not, and certain herbicides have been formulated for use in wet environments while others have not. The selection of specific herbicides or herbicide mixtures coupled with the appropriate treatment methods is made with equal consideration given to the visual and environmental sensitivity of a right-of-way or site within a right-of-way. As a result, herbicides will not be used in certain areas if site sensitivity, regulations, restrictions, plant species composition or height recommend otherwise.

Selective Foliar Treatments

Selective foliar treatments are the application of materials to fully developed leaves, stems, needles or blades of incompatible vegetation. Selective foliar treatments are limited to the season when leaves are fully developed.

The equipment for selective foliar treatments includes: hand-pump backpack sprayers, motorized backpack sprayer and off-road vehicle mounted hydraulic sprayers. In each case, mixtures are applied as a uniform spray over the plant's entire foliage to only dampen or lightly wet the targeted vegetation, instead of being applied to the point of run-off. This minimizes the amount of herbicide drip onto desirable ground cover.

- Selective foliar treatments are used on hardwood trees and incompatible shrub species below 12 feet in height.
- In general, selective foliar treatments are not applied to conifer species; exceptions to this general guideline will be identified in National Grid's YOPs.
- Foliar treatments are also not used where landowner agreements preclude their use, within visual screens on plant species greater than six feet in height and within mechanical only sensitive areas per 333 CMR11.04.
- Foliar treatments are allowed in wetland areas where no standing water is present, per the Department of Food and Agriculture Decision, dated October, 1995, concerning the wetland impact study conducted pursuant to 333 CMR 11.04 (4)(C)(2) (Appendices 1, 5 & 6).

Low Volume Basal Treatment

Low volume basal treatments are the selective application of an herbicide, diluted in specially formulated oil, to wet the entire lower 12 to 18 inches of the main stem of incompatible vegetation. Using a hand pump backpack unit, the oil enables the herbicide solution to penetrate the bark tissue and translocate within the plant. Low volume basal treatments are extremely selective, and when used at appropriate locations are applied at very low per acre rates:

- Optimum vegetation density is low with average heights greater than four feet, within visual screens and in areas where extreme selectivity is necessary;
- This treatment method can be used any time of year except in conditions that prevent adequate access to stems;
- The optimum treatment time frame is in the dormant season when applications are easier due to the lack of foliage and the obstruction caused by grasses and herbaceous growth;
- Restrictions include when snow is too deep or in extremely wet weather;
- Basal treatments are not ideal in high stem densities because of high labor costs and increased herbicide rates per acre.

Low volume basal treatments are used with the same rationale as selective foliar treatments. Basal treatments have the advantage of extending the treatment season into the dormant season thus facilitating the retention of experienced applicators and spreading out the work load. They also have the advantage of being low profile with no noisy motorized equipment and incompatible vegetation is generally controlled without creating brownout when the treatments are completed during the dormant season.

Cut Stump Treatment

Cut stump treatments are the mechanical cutting of incompatible vegetation followed by an herbicide treatment to the phloem and cambium tissue of the stumps. The cut stump mixture is diluted in water or a non-freezing agent and is ideally applied to freshly cut stumps. Application equipment includes: low-volume backpack; hand- pump sprayers; hand

held squirt bottles; paintbrushes, and sponge applicators.

This method is used where maximum control is desirable and/or to reduce the visual impact of vegetation management treatments. It is commonly used:

- To prevent re-sprouts when hand cutting vegetation in preparation for a foliage application;
- To chemically treat incompatible vegetation in sensitive sites where other methods are not possible,
- On all woody vegetation (except non-sprouting conifers) removed from visual screen except within an environmentally sensitive area where restrictions take precedence.

Like basal treatments, cut stump treatments may be used at any time of the year provided snow depth will not prevent cutting the stumps below three inches in height. It is best to avoid during the season of high sap flow, in moderate to heavy rains, and is not practical in moderate to heavy stem densities.

Dormant Stem Treatment

Dormant stem treatment (DST) is a selective herbicide treatment applied during the late fall to early spring time period. The application technique can begin at fall leaf senescence and continue until early bud break.

The equipment for selective DST includes: hand-pump backpack sprayers, motorized backpack sprayer, and off-road vehicle mounted hydraulic sprayers. In each case, mixtures are applied as a spray over the crown to ensure the terminal and lateral buds are covered. Droplets need to cover at least 75% of the crown of the plant. DST can be used on hardwood and some softwood trees and incompatible shrub species below 8 feet in height.

Cut-Stubble Treatment

Cut stubble treatments are applied to the remaining stems left behind after a mowing operation. Following mechanical mowing and typically before woody vegetation re-sprouts, a diluted selective broadleaf herbicide mixture is applied to cut stems and soil of the treatment

area. This treatment type relies on the stems and roots of incompatible woody plants to absorb the herbicides. Herbaceous plants and grasses colonize the treatment area within months of the application.

This application may be used in areas where the wire clearance is not adequate to meet minimum standards and a conversion to grass is needed for the site. Cut stubble may be utilized any time of the year.

Tree Growth Regulators

Tree Growth Regulators (TGRs) are plant growth regulator chemicals that manage or reduce the potential growth rate of trees. This is a useful especially along certain electric lines where repetitive pruning is necessary to maintain adequate tree-wire clearances.

TGRs can lengthen the time frame between pruning cycles and improve the aesthetics of street and yard trees that may otherwise require removal or severe pruning.

TGRs can be applied in 1 of two methods:

1. basal drench around the base of the tree
2. a soil injection next to the buttress root zone

Granular Method

Granulars may be used on occasion to control brush and vines around poles and towers as part of pole maintenance to allow access to the structures. National Grid having access to its structures is necessary for inspections and to respond to maintenance and emergency needs.

Granulars are brush control herbicides that can be applied with no water or sprayer directly to the area surrounding a structure as a pre-emergent or post-emergent. The granular are applied using a calibrated handheld spreader.

Herbicide Application Restrictions and Guidelines

Herbicide application will be restricted during certain adverse weather conditions, such as rain, wind or deep snow.

Rain

Herbicide applications will not be made during periods of moderate or heavy rain fall:

- Foliar applications are effective in light mist;
- Foliar applications will cease during measurable rainfall that creates leaf runoff;
- Foliar applications interrupted by unexpected rainfall, will not resume until the rain ends and active leaf runoff has ceased;
- Basal and cut stump treatment applications are ineffective during measurable rainfall;
- Basal applications that are interrupted by rainfall will not be resumed until at least fifty percent of the application area of the targeted plants is dry.

Wind

Wind affects the individual herbicide treatment methods on different levels.

- Basal or cut stump treatments are not affected by all but the most extreme wind conditions because they are applied in such close proximity to the ground.
- During foliar applications, excessive winds can cause damage to compatible vegetation on or off the right-of-way, therefore, to prevent any significant herbicide drift, treatment crews will comply with the following restrictions:
 - During winds strong enough to bend the tops of trees' main stems on the right-of-way, the treatment crew supervisor will periodically observe the foliar application to ensure no significant movement of the herbicide mixture. If the supervisor can see the mixture moving off the targeted plants, applications will immediately stop until the wind has subsided enough to continue.
 - Following the label, all foliar application mixtures will contain anti-drift agents to reduce the potential of herbicide drift beyond the targeted plants:
 - In moderate wind conditions, as per label recommendations, more anti-drift agents may be added, at the discretion of the contractor supervisor.

Deep Snow

Herbicides will not be applied in deep snow conditions. Deep snow renders it impractical to basally apply herbicides to the lower six inches of the stems or to cut stumps below acceptable maximum height limit.

General Operational Guideline Restrictions

Disposal: The contractor is responsible for the proper disposal of all excess materials and mixtures in accordance with all applicable federal and state laws, regulations and guidelines.

Mixing: Mixing will take place according to all restrictions in 333 CMR 11.00 and according to the chemical labels.

7. JUSTIFICATION OF SELECTIVE HERBICIDE APPLICATIONS

Both regulatory and economic factors dictate the safe, reliable delivery of electric service through our transmission and distribution lines. This requirement necessitates a vegetation management program to control incompatible vegetation. Other regulations require National Grid to minimize the impact our activities have on the environment.

National Grid's IVM program allows us to stay in compliance with these various regulations, including 333 CRM 11.00, by maximizing the control of incompatible vegetation while minimizing the use of herbicides through their judicious use. Having analyzed various vegetation management methods, National Grid's chemical control methods of choice are the selective herbicide treatments described in Section 6 which in combination with mechanical and cultural treatment methods and an understanding of ecological succession, are the most sound and cost effective methods currently available.

Research has determined that when used appropriately herbicides are generally an effective method of vegetation control and can benefit public safety through selective use.¹³ The small amount of herbicide applied selectively at low rates per acre and the herbicide formulations listed in our YOP's are low in acute toxicity, are not known to bio-accumulate and, as applied, and have a short life span in the environment.¹⁴

The *Sensitive Area Material List* is an additional environmental protection tool at our disposal. This list of herbicides helps us further reduce the potential of any negative impact by limiting the herbicide formulations used in the limited spray sensitive areas defined by 333 CMR 11.04. In addition to extensive testing required by the Federal EPA before being included on the *Sensitive Area Materials List*, the impact of these herbicides on the environment are reviewed by MDAR and the Massachusetts Department of Environmental Protection.

333 CMR 11.04(4) also limits the use of herbicides around various surface waters. However, it makes an exception to the general rule for public utilities by allowing herbicide treatments within wetlands as long as sensitive area approved herbicides are not sprayed on or within ten feet of standing or flowing water. This exception is based on a study cited in the *DFA Decision Concerning The Wetland Impact Study Conducted Pursuant to 333 CMR 11.04(4)(c)(2)*. This research shows that selective herbicide applications do not adversely affect wetland plant composition or function (Appendix 5). In fact, according to the study by Environmental Consultants, Inc. quoted in the *Decision*, mechanical vegetation control techniques result in a significantly greater impact on wetland composition and function.¹⁵

¹³ U.S.D.A., Forest Service, "Pesticide Background Statements, Volume 1," *Herbicides, Agriculture Handbook* Number 633, 1984; U.S.E.P.A. *Environmental Stewardship Strategy for Electric Utility Rights-of-Way*, Pesticide Environmental Stewardship Program, Edison Electric Institute Vegetation Management Task Force, August 1996; 333 CMR 11.01, *Rights of Way Regulations*.

¹⁴ (USDA Forest Service, 1984; K.H. Deubert. *Studies on the Fate of Garlon 3A and Tordon 101 Used in Selective Foliar Application in the Maintenance of Utility Rights-of-Way in Eastern Massachusetts*, Final Report prepared for New England Electric et al., 1985; Harrison Biotech, Inc. *A Generic Environmental Impact Report on the Control of Vegetation on Utility and Railroad Rights-of-Way in the Commonwealth of Massachusetts*, Final Report prepared for the Department of Food and Agriculture, Commonwealth of Massachusetts, 1985; N.H. Nickerson, G.E. Moore and A.D. Cutter, *Study of the Environmental Fates of Herbicides in Wetland Soils on Electric Utility Rights-of-Way in Massachusetts over the Short Term*, Final Report prepared for New England Electric et al., December 1994; MDAR. *Surface Water Monitoring of Glyphosate used in Rights-of-Way Railroad Vegetation Management (2005–2006)*, Report, November, 2006.

¹⁵ Nickerson et al., 1993; Environmental Consultants, Inc., *Study of the Impact of Vegetation Management Technique on Wetlands for Utility Rights-of-Way in the Commonwealth of Massachusetts*, Final report prepared for New England Electric et al., 1989

The success of our selective herbicide application program in minimizing unreasonable adverse effects is evidenced by the thriving early successional ecological communities currently present on National Grid's rights-of-way, which includes the diversity and numbers of observed wildlife species taking advantages of our rights-of-way.¹⁶

Selective herbicide applications offer varied degrees of selectivity and favor, or release, certain types of plants; for example, broadleaf vegetation can be controlled with little or no impact to grasses. This diversity can only be achieved by periodically and selectively removing vigorously competitive tree species, including their root systems, which is only practical through selective herbicide application.

Selective herbicide applications minimize the amount of manpower, equipment and the impact of both on the environment compared to less selective mowing operations. For example, when used judiciously, they can be much less destructive than mowing to nesting sites and the vegetation necessary for food and cover. The resulting low growing vegetation provides a more open right-of-way with more attractive flowering plants and berries that support an increase in the diversity of wildlife species.

A selective herbicide program is also more cost effective than a purely mechanical program. The comparatively increased density and height of incompatible vegetation promoted by mechanical cutting requires the expenditure of more time and resources to control. Estimates, based on actual costs for the limited cutting currently done at National Grid, indicate that average expenditures for a mechanical cutting program are two to over five times the cost of the current IVM program. The indirect costs not factored into the estimate include lost income from reduced electric service reliability, increased time and costs for line inspections, maintenance and repair, increased insurance costs caused by higher accident rates, and the increased labor costs required to attract workers to perform this type of work.

¹⁶ Several research projects demonstrate the positive impacts of selective right-of-way vegetation management to non-target organisms (See Appendix 9).

Mechanical controls are also relatively hazardous to workers, the public and the environment. In a mowing operation, objects including rocks and pieces of wood are thrown by the mower, often long distances. Chain saws can kick back and cause injuries despite safety features and protective leg guards. Small diameter cut stumps left by cutting operations may cause trips, falls or punctured tires. Mechanical only treatment programs also facilitate the spread of injurious thorny or poisonous plants which results in unsafe conditions for the public, vegetation management and electric line crews. These plants are most practically controlled by herbicide applications due to their thick, impenetrable growth habits.

The use of mechanical equipment always includes the risk of hydraulic fluid, oil and gas spills or leaks, and chainsaw equipment releases petroleum products into the environment in the form of bar and chain oil. These mechanical operations are a necessary and integral part of National Grid's IVM program, but these hazards are an important limitation that needs to be considered as part of the overall decisions made regarding treatment options, especially when compared to the environmental and safety history of the selected herbicides.

The net benefits of including selective herbicide applications in National Grid's IVM program are tied to their role in establishing early successional ecological communities. Not only does reducing the density and inhibiting the growth of incompatible tree species reduce the actual amount of herbicides needed for vegetation control, but low-growing plant cover helps prevent the soil exposure and erosion that can result from rutting caused by mowing. Treatment cycles are lengthened and there are fewer incompatible plant species that require control which reduces both the long and short term ecological impact of vegetation management activities.

8. DEFINITION, IDENTIFICATION AND TREATMENT OF SENSITIVE AREAS

The general definition of sensitive areas regulated by 333 CMR 11.04 is as follows:

...any areas within Rights-of-Way, including No-Spray and Limited-Spray Areas, in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects.

Protecting these environmentally sensitive sites is accomplished by defining specific sensitive areas and establishing limited spray and no-spray areas and treatment restrictions within these borders based on the sensitivity of each site and the requirement to minimize any unreasonable adverse impacts within that area.

Sensitive Areas regulated by 333 CMR 11.00 include the following:

Water Supplies:

Zone I's

Zone II's

IWPA's (Interim Wellhead Protection Areas)

Class A Surface Water Sources

Tributaries to a Class A Surface Water Source

Class B Drinking Water Intakes

Private Wells

Surface Waters:

Wetlands

Water Over Wetlands

The Mean Annual High Water Line of a River

The Outer Boundary of a Riverfront Area

Certified Vernal Pools

Cultural Sites:

Agricultural Areas

Inhabited Areas

Wildlife Areas:

Certified Vernal Pool Habitat

Priority Habitat

These sensitive areas consist of no-spray areas in which herbicide use is prohibited, limited spray areas, and areas that require special treatment recommendations (See Table 1 and Appendix 7).

TABLE 2: CONTROL STRATEGIES FOR SENSITIVE AREAS[#]

Sensitive Area	No-Spray and Limited -Spray Areas (feet)	Control Method	Restriction Code
Public Ground Water Supplies	400'	Mechanical Only	None
Primary Recharge Area	Designated no-spray area or 1/2 mile radius	Mechanical, Recommended Herbicides*	24 months
Public Surface Water Supplies (Class A & Class B)	100'	Mechanical Only	None
	100'-400'	Recommended Herbicides	24 months
Tributary to Class A Water Source, within 400' upstream of water source	100'	Mechanical Only	None
	100'-400'	Recommended Herbicides	24 months
Tributary to Class A Water Source, greater than 400' upstream of water source	10'	Mechanical Only	None
	10'-200'	Recommended Herbicides	24 months
Class B Drinking Water Intake, within 400' upstream of intake	100'	Mechanical Only	None
	100'-200'	Recommended Herbicides	24 months
Private Drinking Water Supplies	50'	Mechanical Only	None
	50'-100'	Recommended Herbicides	24 months
Surface Waters	10'	Mechanical Only	None
	10'-100'	Recommended Herbicides	12 months
Rivers	10' from mean annual high water line	Mechanical Only	None
	10'-200'	Recommended Herbicides	12 months
Wetlands	100' (treatment in wetlands permitted up to 10' of standing water) [†]	Hand Operated Equipment with 5 gal. mix capacity [†] Recommended Herbicides	24 months
Inhabited Areas	100' (for high- pressure foliar only)	Recommended Herbicides	12 months
Agricultural Area (Crops, Fruits, Pastures)	100' (for high- pressure foliar only)	Recommended Herbicides	12 months
Certified Vernal Pools	10'	Mechanical Only when water is present	None
Certified Vernal Pool Habitat	10'-outer boundary of habitat	No treatment without written approval per 321 CMR 10.14(12)	
Priority Habitat	No treatment without written approval per 321 CMR 10.14(12)		

Restrictions: "24 Months": A minimum of 24 months shall elapse between applications. "12 Months": A minimum of 12 months shall elapse between applications.

*Commonwealth of Massachusetts recommended herbicides from the *Sensitive Area Materials List*, rates and methods per 333 CMR 11.04.

[†]Per "Decision Concerning the Wetlands Impact Study" (see Appendix 5).

[#]Table Compiled by Jeffrey M. Taylor, Vegetation Control Service, Inc.

Treatment in the limited spray area requires the use of herbicides from the *Sensitive Area Materials List* and the application restrictions in 333 CMR 11.04 or in the case of Priority Habitat, approval of the YOP by NHESP.

The general characteristics of the herbicides included on the *Sensitive Area Materials List* are: low toxicity to humans and other animal species; short term soil persistence; biodegradation of active ingredients, and low soil mobility. It is National Grid's policy to primarily use the herbicides on the *Sensitive Area Materials List*, which means as a rule, in most years and/or areas, limited spray areas do not need to be identified in the field by treatment crews. Instead, they may concentrate on marking the more sensitive no-spray areas.

A current list of the *Sensitive Area Materials List* and individual *Fact Sheets* are available at: <https://www.mass.gov/service-details/rights-of-way-sensitive-area-materials-list>. The specific herbicide formulations and mixtures to be used in any given year will be listed in the YOP and the manufacturers' labels and *Fact Sheets* will be included in the appendices of the YOP.

Identification Methods

Two simple descriptions guide the complex identification of the sensitive areas defined in 333 CMR 11.04: *Readily identifiable in the field* and *Not readily identifiable in the field*.

Readily identifiable in the field areas will be treated, identified and when appropriate, marked according to all applicable restrictions listed in 333 CMR11.00.

Not readily identifiable in the field areas will likewise be treated and marked when appropriate, but they are identified by the use of data marked on maps and collected in the YOP and notification processes before the time of treatment.

The individuals assigned the task of identifying and treating sensitive areas in the field will use the appropriate sources and methods from the following list (some of which are already included in National Grid's records):

- National Grid right-of-way maps, records and institutional knowledge;
- Massachusetts Department of Environmental Protection water supply maps

- available through MassGIS;
- MDAR and Municipal Board of Health maps and lists of identified private wells along the right-of-way;
- Correspondence, meetings and input from municipalities within the forty-five day YOP and twenty-one day municipal right-of-way notification letter review and comment periods and the 48 hour newspaper notification (under 333 CMR 11.06 & 11.07 and Chapter 85 of the Acts of 2000);
- Correspondence and meetings resulting from National Grid's abutter notification procedure;
- A point person who verifies identified sensitive areas and any additional areas that may require special precautions;
- United State Geological Survey (USGS) topographical maps;
- Information from contractor's knowledge and records;
- Information from MassGIS;
- Confidential information from NHESP;
- A copy of the YOP and VMP.

The YOPs will contain maps with the most current data available at the time of printing. The maps are a resource and a tool for both the public and the vegetation management crews, therefore, they contain the data needed to identify, mark and treat sensitive areas appropriately. The maps are printed on USGS topographic maps. The most current data available through MassGIS, such as public water supplies and certified vernal pools, and any data that National Grid has collected on items such as private wells are then added on top of the USGS data. At the time of treatment, additional sensitive area information that is collected will be added to the information utilized by National Grid's vegetation management contractors.

As appropriate, sensitive areas will be identified and marked in the field by either National Grid personnel, trained and experienced vegetation management contractor personnel, and/or by individuals trained in the identification of sensitive areas.

Public and Private Drinking Water Supplies

Public and private drinking water supplies come under the *Not readily identifiable in the field* definition and deserve further discussion due to their sensitivity in relationship to the public. The appropriate sources and references listed above will be consulted to determine the location of drinking water supplies, and in accordance with 333 CMR 11.04, known drinking water supplies are marked on the YOP maps and identified in the field. In the various notification processes under 11.06 and 11.07, or at any point, we request municipalities to assist in the identification of new water supplies. Identified private drinking supplies within one hundred feet of a right-of-way are included in our permanent records and maps, and when made cognizant of new wells, these will also be identified and added to our records and maps. Landowners are also encouraged to post signs on the edge of the rights-of-way to help identify private water supplies.

The several different limited spray and no-spray areas mandated by 333 CMR 11.04(2)(a-b) for each type of water supply are included in the diagrams and table in Appendix 7. In all cases, contractors will take all measures necessary to mark and/or identify the appropriate no-spray areas for private and public drinking water supplies.

Priority Habitat of State-Listed Species

National Grid recognizes the importance of the Massachusetts Endangered Species Act, M.G.L.C. 131A, and its significance to right-of-way vegetation management and will comply with all applicable portions of this act and the regulations promulgated thereunder.

321 CMR 10.14, Massachusetts Endangered Species Act Regulations, Part II Exemptions and 333 CMR 11.04(3)(a-c) exempts utility rights-of-way vegetation management from the permit process under the following condition:

The management of vegetation within existing utility rights-of-way provided that the management is carried out in accordance with a vegetation management plan approved in writing by the Division prior to the commencement of work for which a review fee shall be charged, the amount of which shall be determined by the commissioner of administration under the provisions of M.G.L. c.7, § 3B...

To comply with this exemption, National Grid will submit this VMP and our YOPs for approval by the NHESP.

The NHESP has delineated areas as Priority Habitat based on the "Best Scientific Evidence Available" to protect state-listed species from a "take." Under the approval process, details about the Priority Habitat of state-listed species that our activities might affect and management recommendations are shared with National Grid under strict confidentiality agreements. Using this data and best management practices, National Grid and contract personnel will follow the appropriate vegetation management treatment methods within these sensitive areas taking all practical means and measures to modify right-of-way vegetation management procedures to avoid damage to state-listed species and their habitat.

To identify Priority Habitats, National Grid personnel and vegetation management crews must use proper identification procedures. Contractors are, therefore, required to train their personnel to recognize Priority Habitats using one of the following tools: training meetings, paper maps, GPS coordinates and/or GIS systems.

Provisions of 321 CMR 10.00, Part III, also allow the NHESP to designate Significant Habitat on land in the Commonwealth as a legal easement. Vegetation management activities within Significant Habitats require an Alteration Permit per 321 CMR 11.68. No such designations have been made to date, but in the eventuality that any Significant Habitats are designated on a National Grid right-of-way, we would be notified as an owner of interest. National Grid will, when it becomes necessary, seek a permit under the terms of the coordinated permit review process.

Treatment of Wetlands

Pursuant to 333 CMR 11.04 based upon the results of two right-of-way wetland impact studies, the Massachusetts Department of Food and Agriculture (now MDAR) in consultation with the Department of Environmental Protection and the Right-of-Way Advisory Panel, made a determination that herbicides, when used under the guidance of an IVM program and other conditions as set forth in the determination, have less impact on wetlands than the sole use of mechanical techniques (see Appendices 5 & 6).

Based on the *DFA Decision Concerning The Wetland Impact Study Conducted Pursuant to 333 CMR 11.04(4)(c)(2)*, incompatible vegetation will, therefore, be selectively treated following the recommendations in the *Decision* including the use of sensitive area approved herbicides and a no-spray area on or within ten feet of standing or flowing water.

9. ALTERNATE LAND USE

Most National Grid right-of-way acreage, estimated at over eighty percent, is owned by easement rights. This, in general, permits National Grid to construct, operate and maintain the electric lines, control vegetation and access the lines. The easement usually prohibits the landowner from erecting structures, inhibiting access by National Grid and its contractors, growing trees or otherwise interfering with the operation of the electric line. The property owner retains all other ownership rights and may use or restrict the use of the property on the right-of-way in any manner that conforms to the easement.

Alternative land uses that are compatible with the operation of electric utility lines are acceptable on National Grid's rights-of-way. Currently, land uses on rights-of-way include, but are not limited to, parking lots, golf courses, parks, driveways, roadways, crops, pastures, gardens, lawns and Christmas tree farms.

Sometimes landowners request that their property not be treated with herbicides. Through the easement, National Grid purchased the right to maintain vegetation on the right-of-way. National Grid utilizes the safest, most effective management program available. Generally, when the program is described to the property owner and/or the property owner observes the treatment application, their previous concerns are reduced or eliminated. If the property owner still requests that National Grid refrain from using herbicides on that property, National Grid may enter a formal agreement with that property owner. Before executing an agreement, the property owner must agree to maintain the vegetation on the right-of-way, at their expense, within National Grid's specifications. Specifications vary with each individual property, but basically require that woody vegetation be kept below a certain height and clear of access roads, gates, guys, poles and towers. National Grid's policy sets the maximum height

criteria as the smaller of 12 feet or at a height such that five years of growth will not put the tree into the line.

10. INDIVIDUALS SUPERVISING AND DEVELOPING THE IVM PROGRAM

The professional responsible for developing and submitting this plan is:

Mariclaire Rigby, Lead Vegetation Strategy Specialist
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Mariclaire has a Bachelor of Science degree in Natural Resource Management-Forestry from the State University of New York College of Environmental Science and Forestry. She has worked in National Grid's Forestry Department since 2005. Mariclaire currently serves as a utility company representative on the Department of Agricultural Resources Rights-of-Way Advisory Panel, and is a member of the International Society of Arboriculture and the Utility Arborist Association. She is also an ISA Certified Arborist.

The professionals responsible for supervising this plan are:

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1250 Brayton Pt Rd	164 Viscoloid Ave	939 Southbridge St	939 Southbridge Street
Somerset, MA 02725	Leominster, MA 01453	Worcester, MA 01610	Worcester, MA 01610
(508) 730 4007	(978) 840-3816	(508) 860-6212	508-860-6925

National Grid retains qualified professionals to conceive, design, implement and supervise all phases of vegetation management operations. Vegetation management, especially herbicide application operations, requires an elevated level of technical expertise and experience to design the best integrated management approach and to adequately prescribe the proper treatments to control incompatible vegetation.

Overall supervision of the VMP and YOP's will be performed by National Grid and contract foresters. The contract foresters are responsible for guaranteeing that their field crews comply with the VMP and YOP while the National Grid foresters listed above will supervise the field implementation of the VMP and YOP.

11. REMEDIAL SPILL AND EMERGENCY PLAN

This section is offered as a general procedural guide for responding to chemical spills or related accidents (related accidents include but are not limited to fire, poisoning and vehicle accidents). National Grid contracts with independent, professional, certified herbicide applicators that are responsible for the containment, clean up and reporting of chemical spills or accidents. The following is, therefore, only a guide to the items that shall be available to the treatment crew in the event of a chemical spill or emergency:

Types of Chemical Spills that Require Action

Chemicals include, but are not limited to the following:

- | | | |
|-------------------------------------|--------------------------|--------------------------|
| i. Herbicides | <input type="checkbox"/> | Diesel Fuel |
| ii. Bar and Chain Oil | <input type="checkbox"/> | Gasoline |
| iii. Motor and Hydraulic Oil/Fluids | <input type="checkbox"/> | Title 3 Hazmat Materials |

Required Spill Response Equipment

As a minimum, the treatment crew must have available on the job site:

- | | | |
|--------------------------------------------|--------------------------|-------------------------|
| iv. YOP with Emergency Contact List | <input type="checkbox"/> | Shovel |
| v. Safety Data Sheets (SDS) | <input type="checkbox"/> | Broom |
| vi. Product Label | <input type="checkbox"/> | Flagging |
| vii. Product Fact Sheets (when applicable) | <input type="checkbox"/> | Leak Proof Container |
| viii. Appropriate Absorbent Material | <input type="checkbox"/> | Heavy-duty Plastic Bags |

Personal Contact

In the event of **Personal Contact** with hazardous chemicals:

- ix. Wash affected area with plenty of soap and water;
- x. Change clothing which has absorbed hazardous chemicals;
- xi. If necessary, contact a physician;
- xii. If necessary, contact the proper emergency services;
- xiii. If necessary, follow the procedures for Major or Minor Spills as outlined in Appendix 8;
- xiv. Avoid breathing the fumes of hazardous chemicals.

Clean-up Procedures

Education and attention will constantly be directed at accident and spill prevention,

however, in the event of an unfortunate incident, a spill response check list is included in Appendix 8 as a guide that will be included in the YOP's.

Reference Tables (information subject to change as necessary)

Table 3: Herbicide Manufacturers

MANUFACTURER	TELEPHONE	SPECIAL
Albaugh Inc.	800-247-8013	
Bayer Environmental Science	800-334-7577	
BASF Corporation	800-832-4357	
Dow Agro Sciences	800-992-5994	
E.I. du Pont de Nemours	800-441-3637	Medical
Monsanto	314-694-4000	
Nufarm	877-325-1840	Medical
Rainbow Treecare	877-272-6747	

Table 4: State Agencies

STATE AGENCY	TELEPHONE NUMBER	SPECIAL INSTRUCTIONS
Massachusetts Pesticide Bureau	617-626-1700	A.S.A.P. (within 48 hours)
Massachusetts Department of Environmental Protection, Emergency Response Section	Main Office (24 Hours): (888) 304- Southeast Region: (508) 946-2700 Northeast Region: (978) 694-3200 Central Region: (508) 792-7650 Western Region: (413) 784-1100	For emergencies involving reportable quantities of hazardous materials; required info: City/town, street address, site name (if applicable), material
Massachusetts Dept. of Public Health, Bureau of Environmental Health, Environmental Toxicology	(617) 624-5757	
Massachusetts Poison Information Centers	(800) 682-9211	For medical emergencies involving suspected or known pesticide poisoning

Table 5: Emergency Services

EMERGENCY SERVICE	TELEPHONE NUMBER	SPECIAL INSTRUCTIONS
Massachusetts State Police, Central Office	617-566-4500 or 911	
Local Fire / Police Dept.	911	
ChemTrec	800-424-9300	
Clean Harbors	800-OIL-TANK	
Pesticide Hotline	800-858-7378	PST: 6:30 am – 4:30 pm, Web: www.NPIC.orst.edu

Table 6: National Grid’s contacts in the case of a spill or accident

National Grid Forestry Supervisors		
Jonathan Duval 1250 Brayton Point Rd Somerset, MA 02725 (508) 730 4007	Eric Gemborys 164 Viscoloid Ave Leominster, MA 01453 (978) 840-3816	Jason Magoon 939 Southbridge St Worcester, MA 01610 (508) 860-6212

Table 7: Local Boards of Health/Town Hall (to be filled as appropriate in the YOPs)

TOWN	BOARD OF HEALTH/ TOWN

Appendix 1

333 CMR 11.00, Rights-of-Way Regulations

333 CMR 11.00: RIGHTS OF WAY MANAGEMENT

Section

- 11.1 Purpose
- 11.2 Definitions
- 11.3 General Provisions
- 11.4 Sensitive Area Restrictions
- 11.5 Vegetation Management Plan (VMP)
- 11.6 Yearly Operational Plan (YOP)
- 11.7 Public Notification
- 11.8 Notice of Modification and Revocation
- 11.9 Right-of-Appeal
- 11.10 Penalties
- 11.11 Rights-of-Way Advisory Panel
- 11.01: Purpose

The purpose of 333 CMR 11.00 is to establish a statewide and uniform regulatory process which will minimize the uses of, and potential impacts from herbicides in rights-of-way on human health and the environment while allowing for the benefits to public safety provided by the selective use of herbicides. Specific goals of 333 CMR 11.00 are to:

1. Ensure that an Integrated Pest Management (IPM) approach to vegetation management is utilized on all rights-of-way covered by 333 CMR 11.00.
2. Establish standards, requirements and procedures necessary to prevent unreasonable risks to humans or the environment, taking into account the economic, social and environmental costs and benefits of the use of any pesticide.
3. Ensure ample opportunity for public and municipal agency input on potential impacts of herbicide application to rights-of-way in environmentally sensitive areas.
4. Establish a mechanism for public and municipal review of rights-of-way maintenance plans.

11.2 : Definitions

For the purposes of 333 CMR 11.00, unless the context clearly requires otherwise, the following definitions shall apply:

Agricultural Area includes, but is not limited to, actively cultivated gardens, greenhouses, orchards, fields, pastures, and other areas under cultivation or agricultural management.

Applicant, any person representing any federal, state or local government or agency, utility, railroad or pipeline, that intends to maintain a right-of-way in the Commonwealth by application of herbicides.

Associated Surface Water Body, as identified on the most current available maps prepared by the Department of Environmental Protection, any body of water that is hydrologically connected to a Class A surface water source.

Ballast, the coarse gravel or crushed rock on which the ties, tracks and switching, signaling and communication devices of a railroad are laid.

Broadcast, any non-selective herbicide application technique which results in application to all vegetation within a target area.

Certified Vernal Pool, a confined basin depression, certified and mapped by NHESP pursuant to the provisions of 310 CMR 10.57(2)(a)5,6, which, at least in most years, holds water for a minimum of two continuous months during the spring and/or summer, and which is free of adult fish populations.

Certified Vernal Pool Habitat, that vernal pool habitat which has been certified and mapped by NHESP pursuant to the provisions of 310 CMR 10.57(2)(a)5,6 or, in the event that such habitat has not been mapped, the area extending 100 feet horizontally outward from the boundary of any Certified Vernal Pool.

Class A Waters, waters which are designated as a source of public water supply, as defined in 314 CMR 4.05(3)(a).

Class B Drinking Water Intakes, intakes to Class B waters suitable as sources of public water supply with appropriate treatment, as defined at 314 CMR 4.05(3)(b) and as identified on the most current available maps prepared by the Department of Environmental Protection.

Department, the Department of Agricultural Resources.

FIFRA, the Federal Insecticide, Fungicide and Rodenticide Act, Public Law 92-516.

Foliar Treatment, any technique which applies herbicide to leaves of target vegetation.
Inhabited Area, any area where people generally live, work or gather, including, but not limited to, any residence, school, hospital, park or recreational facility.

Interim Wellhead Protection Area (IWPA), for public water systems using wells or well fields that lack a Department of Environmental Protection-approved Zone II, an interim wellhead protection area, as that term is defined in the Massachusetts drinking water regulations, 310 CMR 22.02, and as identified on the most current available maps prepared by the Department of Environmental Protection, shall apply. Generally, this is a ½-mile radius for sources whose approved pumping rate is 100,000 gallons per day or greater. For smaller sources, the radius in feet is determined by multiplying the approved pumping rate in gallons per minute by 32 and adding 400.

Limited Application Waiver, a waiver from the requirements of 333 CMR 11.05 and 11.06, granted at the Department's sole discretion pursuant to 333 CMR 11.03(14), when the reason for the application is emergency public health or safety or when the application is for one time only.

Limited Spray Area, any area that is both within a Right-of-Way and within:

- (a) any Zone II or IWPA
 - (b) a distance of between 100 feet and 400 feet of any Class A Surface Water Source
 - (c) a distance of between 10 and 200 feet of any tributary or associated surface water body where the tributary or associated surface water body runs outside the Zone A for the Class A surface water source
 - (d) a lateral distance of between 100 and 200 feet for 400 feet upstream, on both sides of the river, of a Class B Drinking Water Intake
 - (e) a distance of between 50 and 100 feet of any identified Private Well
 - (f) a distance of between 10 and 100 feet of any Wetlands or Water Over Wetlands
 - (g) a distance of between 10 feet from the mean annual high water line of any river and the outer boundary of the Riverfront Area
 - (h) a distance of between ten feet from any Certified Vernal Pool and the outer boundary of any Certified Vernal Pool Habitat
 - (i) a distance of 100 feet of any Agricultural or Inhabited Area.
- Low Pressure, pressure under 60 pounds per square inch (psi).

Maps, United States Geological Survey maps of scale 1:25,000 or other maps, as determined by the Department, which are of such accuracy and scale to provide sufficient detail so that sensitive areas can be delineated.

NHESP, the Natural Heritage and Endangered Species Program within the Massachusetts Division of Fisheries and Wildlife.

No-Spray Area, any area that is both within a Right-of-Way and within:

- (a) any Zone I
- (b) 100 feet of any Class A Surface Water Source
- (c) 100 feet of any tributary or associated surface water body where the tributary or associated surface water body runs within 400 feet of a Class A surface water source
- (d) 10 feet of any tributary or associated surface water body where the tributary or associated surface water body is at a distance greater than 400 feet from a Class A surface water source
- (e) a lateral distance of 100 feet for 400 feet upstream, on both sides of the river, of a Class B Drinking Water Intake
- (f) 50 feet of any identified Private Well
- (g) 10 feet of any Wetlands or Water Over Wetlands
- (h) 10 feet of the mean annual high-water line of any river
- (i) 10 feet of any Certified Vernal Pool.

Person, an individual, association, partnership, corporation, company, business organization, trust, estate, the Commonwealth or its political subdivisions, administrative agencies, public or quasi-public corporation or body, or any other

legal entity or its legal representatives, agent or assignee, or a group of persons.

Person Aggrieved, any person who, because of an act or failure to act by the Department may suffer an injury in fact which is different either in kind or magnitude from that suffered by the general public and which is within the scope of the interests identified in 333 CMR 11.00. Such person must specify in writing sufficient facts to allow the Department to determine whether or not the person is in fact aggrieved.

Private Well, any private drinking water supply identified by the local Board of Health, the well owner or the Department of Agricultural Resources.

Private Well Registry, a registry of private wells located within 100 feet of a right-of-way which is maintained by the Department of Agricultural Resources. Homeowners must notify the Department by completing a registration form which is available directly from the Department or online at the Department website.

Public Ground Water Source, a source of water for a Public Water Supply System, as that term is defined in the Massachusetts drinking water regulations at 310 CMR 22.02.

Public Water Supplier, as defined at 310 CMR 22.02(1), any person who owns or operates a public water supply system.

Right(s)-of-Way (ROW), any roadway, or thoroughfare on which public passage is made and any corridor of land over which facilities such as railroads, powerlines, pipelines, conduits, channels or communication lines or bicycle paths are located.

Rights-of-Way Advisory Panel, a panel established to advise the Department on issues relating to 333 CMR 11.00 and to fulfill specific functions as detailed within 333 CMR 11.05 and 11.11.

River, a river as defined at 310 CMR 10.04 and as identified on the most current available maps prepared by the Department of Environmental Protection.

Riverfront Area, a riverfront area as defined at 310 CMR 10.58(2) and as identified on the most current available maps prepared by the Department of Environmental Protection. In general, this term shall mean the area between the mean annual high-water line of a perennially flowing river and a parallel line 200 feet away.

Selective Application, any application of herbicides, in such a manner that the delivery to the target vegetation is optimized and delivery to non-target vegetation and the environment is minimized.

Sensitive Areas, as defined in 333 CMR 11.04, any areas within Rights-of-Way, including No-Spray and Limited-Spray Areas, in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects.

State-listed Species, any species on the Massachusetts list of Endangered, Threatened, and Special Concern Species as described in the Massachusetts Endangered Species Act (M.G.L. c. 131A; 321 CMR 10.02).

State-listed Species Habitat, the Estimated Habitats of Rare Wildlife (310 CMR 10.59 and 10.37) and the Priority Habitats for State-listed Species (321 CMR 10.02) as shown on the most recent edition of the Massachusetts Natural Heritage Atlas prepared by NHESP.

Stem Treatment, any technique including, but not limited to, stump, basal, stem, injection, banding, frill, or girdle and any other technique which delivers herbicide at low pressure to the stump, base or stem of the target vegetation.

Surface Water Source, any lake, pond, reservoir, river, stream or impoundment designated as a public water supply in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, as identified on the most current available maps prepared by the Department of Environmental Protection.

Target Vegetation, any plant species which has the potential to interfere with the operation and safety of the right-of-way.

Touch-up Application, any limited application of herbicides following an initial treatment, which is necessary to achieve the desired vegetation control.

Tributary, as identified on the most current available maps prepared by the Department of Environmental Protection, any body of running, or intermittently running, water which moves in a definite channel, naturally or artificially created, in the ground due to a hydraulic gradient, and which ultimately flows into a Class A surface water source, as defined in 314 CMR 4.05(3)(a).

Vegetation Management Plan (VMP), a long term management plan for the applicant's right-of-way system which describes the intended program for vegetation control over a five year period.

Vernal Pool, see Certified Vernal Pool.

Water Over Wetlands, the ocean or any estuary, lake or pond as defined at 310 CMR 10.04.

Wetland(s), any of the following areas as defined in 310 CMR 10.02(1)(a), (b), (c) and (f):

- (a) Any bank, the ocean
any freshwater wetland, any estuary
any coastal wetland, any creek
any beach, bordering any river
any dune, on any stream
any flat, any pond
any marsh, or any lake
or any swamp
- (b) Land under any of the water bodies listed above
- (c) Land subject to tidal action

(f) Riverfront area.

Wetlands Determination, a written determination of the boundaries of Wetlands and boundaries of areas within 100 feet of Wetlands in accordance with the regulations of the Department of Environmental Protection (DEP) at 310 CMR 10.05(3)(a)1. and 2.. 310 CMR 10.03(6)(b) require applicants not eligible for a public utility exemption to submit these determinations with their VMPs if they will apply herbicides within 100 feet of wetlands and will not submit a Notice of Intent under M.G.L.c. 131, §40, the Wetlands Protection Act. In order to obtain a Wetlands Determination, the applicant should submit a request to the conservation commission on maps of a scale that will enable the conservation commission or Department of Environmental Protection to find and delineate the boundaries of Wetlands and buffer zones within the vicinity of the right-of-way herbicide management area. To be considered “valid”, the Wetlands Determination should be made no sooner than six months immediately prior to the submission of the Vegetation Management Plan. The Wetlands Determination shall cover the period of the Vegetation Management Plan only and shall expire at the end of the five year period of that Vegetation Management Plan.

Yearly Operational Plan (YOP), the yearly operational plan which describes the detailed vegetation management operation for the calendar year consistent with the terms of the long term Vegetation Management Plan.

Zone A, as identified on the most current available maps prepared by the Department of Environmental Protection, the protective land area for a Surface Water Source, Class A water source, Tributary, or Associated Surface Water Body defined in 310 CMR 22.02 as:

- (a) the land area between the Class A surface water source and the upper boundary of the bank;
- (b) the land area within a 400 foot lateral distance from the upper boundary of the bank of a Class A surface water source, as defined in 314 CMR 4.05(3)(a); and
- (c) the land area within a 200 foot lateral distance from the upper boundary of the bank of a Tributary or Associated Surface Water Body.

Zone I, as identified on the most current available maps prepared by the Department of Environmental Protection and as defined at 310 CMR 22.02, the protective radius required around a public water supply well or wellfield. For public water system wells with approved yields of 100,000 gallons per day (gpd) or greater, the protective radius is 400 feet. Tubular wellfields require a 250 foot protective radius. Protective radii for all other public water system wells are determined by the following equation: Zone I radius in feet = $(150 \times \log \text{ of pumping rate in gpd}) - 350$.

Zone II, as identified on the most current available maps prepared by the Department of Environmental Protection and as defined at 310 CMR 22.02, the aquifer recharge area for a public water supply well or wellfield.

11.3 : General Provisions

- (1) No person shall use an herbicide for the purpose of clearing or maintaining a right-

of-way unless appropriately certified by the Department, or licensed by the Department and working under the on-site supervision of an appropriately certified applicator.

(2) No person shall use an herbicide for the purpose of clearing or maintaining a right-of-way except in accordance with a Vegetation Management Plan (VMP) and a Yearly Operational Plan (YOP) as approved by the Department. The YOP shall be available at the work site at all times during herbicide applications and be made available to the Department and municipal officials including the Conservation Commission and Board of Health upon reasonable request.

(3) No person shall handle, mix or load an herbicide concentrate on a right-of-way within 100 feet of a sensitive area.

(4) The perimeter of any sensitive areas which are not readily identifiable on the ROW shall be identified with a clearly visible marker system, consistent with the VMP, prior to any herbicide application.

(5) No foliar application of herbicides shall be used to control vegetation greater than 12 feet in height except for side trimming.

(6) No herbicide shall be applied when the wind velocity is such that there is a high propensity to drift off target and/or during measurable precipitation, and no person shall apply herbicides in such a manner that results in drift into any No-spray Area.

(7) No person shall apply herbicides by aircraft for the purpose of clearing or maintaining a right-of-way.

(8) No touch-up applications shall be carried out except under the following conditions:

(a) Touch-up applications must occur within 12 months of the initial application.

(b) All applicable public notification procedures of M.G.L. c. 132B, § 6B, as outlined in 333 CMR 11.07(1) and (3), are followed.

(c) No more than 10% of the initially identified target vegetation on the applicant's right-of-way in any municipality may be treated and the total amount of herbicide applied in any one year shall not exceed the limits specified by the label or Yearly Operational Plan.

(d) The Department may impose such additional restrictions or conditions on the use of herbicides as it deems necessary to protect public health and the environment.

(9) The Department will maintain mailing lists of individuals and groups desiring to obtain notices on various aspects of the Program.

(10) No person shall apply any herbicide identified as a Potential Ground Water Contaminant pursuant to 333 CMR 12.00 to a right-of-way.

(11) No person shall use an herbicide for the purpose of clearing or maintaining a right-of-way unless that person has obtained the most current available map of public ground water sources from the Department of Environmental Protection.

(12) No person shall use an herbicide for the purpose of clearing or maintaining a right-of-way unless that person has done one or more of the following:

(a) obtained a current list of identified Private Wells within 100 feet of the right-of-way from the Board of Health, or

(b) obtained a current list of all private wells, within 100 feet of the right of way from the Department of Agricultural Resources private well registry; or (c) followed an alternative Private Well identification method outlined in an approved YOP.

(13) The applicator shall provide any employee of any state agency, or authority as defined in M.G.L. c. 3, § 39, when such employee is, within a right-of-way, using pesticides, supervising the use of pesticides, or present during the use of pesticides, with personal protective equipment and clothing. Applicators should note that other federal or state laws or regulations pertaining to pesticide applications may require this personal protective equipment to include protections according to Material Safety Data Sheets (MSDS's), the product label, and any other supporting technical data supplied by the manufacturer.

(14) Notwithstanding the provisions of 333 CMR 11.03(2) or other provisions of 333 CMR 11.00, the Department may, at its sole discretion, issue Limited Application Waivers to applicants wishing to apply herbicides to clear or maintain rights-of-way without VMPs or YOPs, but only under the following conditions:

(a) The applicant must demonstrate either:

1. that the application will not occur more than once in a five year period unless a VMP and a YOP are prepared and all other requirements of 333 CMR 11.00 are met; or

2. that the application is necessary to protect public health or safety.

(b) The applicant must still adhere to all public notification requirements established at 333 CMR 11.07(1) and (3).

(c) The applicant must provide the Department with a letter establishing the concurrence of the chief elected official or board of selectmen of the municipality where the application is to be made.

(d) The applicant may only use herbicides on the Department's "Herbicides Recommended for Use in Sensitive Areas List."

(e) If the application could impact Wetlands, the Department recommends that the applicant send a copy of its application for a Limited Application Waiver to the Department of Environmental Protection's Division of Wetlands and Waterways no less than 21 days before the proposed application.

(f) It should be noted that, with certain exceptions for public utilities, wetlands regulations at 310 CMR 10.03(6)(b) currently require

Wetlands Determinations prior to any application within 100 feet of a Wetland.

Limited Application Waivers shall be issued solely at the Department's discretion, and the Department may impose such additional restrictions or conditions on the use of herbicides as it deems necessary to protect public health and the environment.

11.4 : Sensitive Area Restrictions

(1) General

In any sensitive area:

(a) No more than the minimum labeled rate of herbicide for the appropriate site, pest, and application method shall be applied.

(b) Herbicides shall only be applied selectively by low pressure, using foliar techniques or basal or cut-stump applications, or other method approved for use by the Department.

(c) No person shall apply herbicides for the purpose of clearing or maintaining a right-of-way in such a manner that results in drift to any area within 10 feet of standing or flowing water in a wetland; or area within 400 feet of a public drinking water supply well; or area within 100 feet of any Class A surface water used as a public water supply; or area within 50 feet of a Private Well.

(d) Only herbicides specified by the Department as acceptable for use in sensitive areas pursuant to the Cooperative Agreement executed between the Department of Agricultural Resources and the Department of Environmental Protection on July 1-2, 1987, or future amendments thereto, shall be used in sensitive areas. Applicants proposing to use an herbicide which has been registered for use on rights-of-way but has not yet been evaluated pursuant to the provisions of the Cooperative Agreement may request that such herbicides be evaluated pursuant to said provisions. For an herbicide that has been evaluated pursuant to the provisions of the Cooperative Agreement, applicants proposing to use such herbicide in a manner inconsistent with the terms and conditions of use imposed in the guidelines may request a modification or waiver of such terms or conditions. A request for such modification or waiver shall provide a detailed rationale for use, with all relevant data including but not limited to environmental fate, efficacy and human health effects of the proposed herbicide. Such herbicides and/or uses shall be subject to the evaluation standards adopted by the Departments of Agricultural Resources and Environmental Protection in the Cooperative Agreement.

Commentary

Applicants not eligible for the public utilities exemption from the Wetlands Protection Act outlined at 310 CMR 10.03(6)(a), who wish to apply pesticides registered for use in Massachusetts to rights-of-way, may choose to apply herbicides determined to be suitable for use in sensitive areas in accordance with the provisions of the Cooperative Agreement mentioned above or, alternatively, such applicants may

proceed pursuant to the provisions of 310 CMR 10.00 as authorized by M.G.L. c. 131, § 40.

(e) The Department may impose such additional restrictions or conditions on the use of herbicides within or adjacent to sensitive areas as it determines necessary to protect human health or the environment. Such changes may be proposed by a municipal agency or individual during the public comment period.

(f) In the event of a question or dispute as to which setback applies to a sensitive area, the most restrictive setback shall apply.

(2) Water Supplies

(a) Public Ground Water Sources

1. No herbicides shall be applied within a Zone I.
2. No herbicides shall be applied within a Zone II or IWPA unless:
 - a. A minimum of 24 months has elapsed since the last application to the site; and
 - b. Herbicides are applied selectively by low pressure, using foliar techniques or basal or cut-stump applications.

(b) Class A Public Surface Water Sources, Associated Surface Water Bodies, Tributaries and Class B Drinking Water Intakes

1. No herbicides shall be applied within 100 feet of any Class A public surface water source.
2. No herbicides shall be applied within 100 feet of any tributary or associated surface water body located within the Zone A of a Class A public surface water source, or within 10 feet of any tributary or associated surface water body located outside of the Zone A of the Class A public surface water source.
3. No herbicides shall be applied within a lateral distance of 100 feet for 400 feet upstream of any Class B Drinking Water Intake.
4. No herbicides shall be applied within a distance of between 100 feet from any Class A surface water source and the outer boundary of any Zone A, or within a distance of between 10 feet and the outer boundary of the Zone A for any tributary or associated surface water body located outside of the Zone A of a Class A surface water source, or within a lateral distance of between 100 and 200 feet for 400 feet upstream of a Class B Drinking Water Intake, unless:
 - a. A minimum of 24 months has elapsed since the last application to the site; and
 - b. Herbicides are applied selectively by low pressure, using foliar techniques or basal or cut-stump applications.

(c) Private Wells

1. No herbicides shall be applied within 50 feet of an identified Private Well.
2. No herbicides shall be applied within a distance of between 50 feet and 100 feet of an identified Private Well, unless:

- a. A minimum of 24 months has elapsed since the last application to the site; and
- b. Herbicides are applied selectively by low pressure, using foliar techniques or basal or cut-stump applications.

(3) State-listed Species Habitat

(a) Any person proposing to apply an herbicide within any State-listed Species Habitat who does not have a current Yearly Operational Plan approved in writing by the Division of Fisheries and Wildlife pursuant to 321 CMR 10.14(12), shall submit all necessary materials required for review pursuant to 321 CMR 10.18.

(b) The management of vegetation within existing utility rights-of-way shall be exempt from the requirements of 321 CMR 10.18 through 10.23, provided that the management is carried out in accordance with a Yearly Operational Plan approved in writing by the Division of Fisheries and Wildlife, pursuant to 321 CMR 10.14(12).

(c) No person shall apply an herbicide within State-listed Species Habitat unless the application is approved by the Division of Fisheries and Wildlife pursuant to 333 CMR 11.04 (3a and 3b), and such approval is submitted to the Department.

(4) Wetlands, Waters Over Wetlands, Riverfront Areas, and Certified Vernal Pools

(a) No herbicide shall be applied on or within 10 feet of a Wetland or Water Over a Wetland, within 10 feet of the mean annual high-water line of any River, or within 10 feet of any Certified Vernal Pool.

(b) No herbicide shall be applied on or within a distance of between 10 feet and 100 feet of any Wetland or Water Over a Wetland, within a distance of 10 feet from the mean annual high-water line of any River and the outer boundary of any Riverfront Area, or within a distance of 10 feet from any Certified Vernal Pool and the outer boundary of any Certified Vernal Pool Habitat unless:

1. A minimum of 12 months has elapsed since the last application to the site; and
2. Herbicides are applied selectively by low pressure, using foliar techniques or basal or cut-stump applications.

(c) Notwithstanding 333 CMR 11.04(4) (a) –(b), public utilities providing electric, gas, water, telephone, telegraph and other telecommunication services (and other applicants, if consistent with all relevant provisions of the Massachusetts Wetlands Protection Act and its regulations in effect at the time of application) may apply herbicides on or within 10 feet of a Wetland in accordance with the following conditions:

1. Submission of a study, the design of which is subject to prior approval by the Departments of Agricultural Resources and Environmental Protection, evaluating impacts of the proposed vegetation management

program utilizing herbicides on or within 10 feet of Wetlands, and comparing those impacts to those which would result if only non-chemical control methods were used in these areas. The study must detail

vegetation management practices and use patterns specific to those used by the type of entity submitting the study; and

2. A finding by the Department, after consultation with the Rights-of-Way Advisory Panel, that the proposed vegetation management program utilizing herbicides on or within 10 feet of Wetlands will result in less impacts to the Wetlands than mechanical control.

3. Notwithstanding the above, no herbicides shall be applied on or within ten feet of any standing or flowing water in a Wetland.

(5) Inhabited and Agricultural Areas

No foliar herbicide shall be applied within 100 feet of any Inhabited Area or any Agricultural Area unless:

1. A minimum of 12 months has elapsed since the last application to the site; and
2. Herbicides are applied selectively by low pressure, using foliar techniques or basal or cut-stump applications.

11.5 : Vegetation Management Plan (VMP)

(1) General.

(a) Unless otherwise specified by the Department, all VMPs should be submitted by the applicant no later than September 1st prior to the calendar year of the proposed first year of maintenance. All approved VMPs shall be effective for a five year period unless otherwise modified, or revoked by the Department.

(b) The VMP shall be presented on forms and/or format approved by the Department.

(2) Requirements. The VMP shall include, but not be limited to, the following:

(a) General statement of goals and objectives of the VMP.

(b) Identification of target vegetation.

(c) Intended methods of vegetation management and rationale for use, including vegetation control techniques, equipment proposed for use, timing of applications and alternative control procedures.

(d) Discussion of justification for proposed herbicide applications, including a description of the alternative control methods considered and the reasons that they were rejected.

(e) Methods, references and sources for identifying sensitive areas and control strategies proposed for sensitive areas. Applicants should note that Department of Environmental Protection regulations at 310 CMR 10.03(6)(b) currently require Wetlands Determinations for applicants that are not eligible for a public utility exemption.

(f) Operational guidelines for applicators relative to herbicide use.

(g) Identification and qualifications of individuals developing and submitting a plan.

(h) A detailed description of the IPM Program, showing how it will minimize the amount and frequency of herbicide application.

- (i) Description of alternative land use provisions or agreements that may be established with individuals, state, federal or municipal agencies that would minimize the need for herbicides, including the rationale for accepting or denying any reasonable request made by any individual.
- (j) Description of a remedial plan to address spills and related accidents.
- (k) For state agencies and authorities as defined in M.G.L. c. 3, § 39, a description of the applicant's policy to eliminate or, if necessary, reduce the use of pesticides for any vegetation management purpose along roadways, and a demonstration that, for the proposed application, the costs of non-chemical vegetation control significantly outweigh the benefits.

(3) Public Notice, Review and Comment.

- (a) Upon receipt of the proposed VMP, the Department shall schedule and hold appropriate regional public hearings affording all interested parties the opportunity to comment, both at the hearings and in writing to the Department, on the proposed plan.
- (b) At least 21 days prior to the public hearings, the Department shall publish notice of the hearings in the Environmental Monitor and regionally located newspapers, and send notice to municipalities covered by the plan and to the appropriate mailing list. The notice will include locations where copies of the VMP can be reviewed.
- (c) The public shall have no less than 45 days, starting from publication of the Environmental Monitor notice, to comment upon proposed VMPs, unless the Department extends the comment period for good cause.
- (d) Wherever a chief elected official, Board of Health or Conservation Commission in a municipality covered by the proposed VMP requests a copy of the proposed plan, the applicant shall, at least 21 days prior to the end of the public comment period, respond to this request. The response must either include a copy of the proposed VMP, or an Internet address where the VMP may be viewed and a note that a hard copy will be provided promptly upon further request.

(4) Disposition of VMP.

- (a) 25 copies of the proposed VMP shall be submitted to the Department. The Department shall distribute copies of the proposed VMP to each member of the Rights-of-Way Advisory Panel. The Department may, at its sole discretion, allow electronic presentation of the VMP in lieu of some or all of the 25 copies that would otherwise be submitted pursuant to this subsection.
- (b) Within 30 days of the end of the public comment period unless extended for good cause, the Rights-of-Way Advisory Panel shall review the VMPs and recommend in writing to the Department approval, denial or modification of each VMP; if necessary, the Advisory Panel may request additional information from the applicant.
- (c) Within 21 days of the end of the Rights-of-Way Advisory Panel review period, unless extended by the Department for good cause, the Department will notify the applicant and the Advisory Panel in writing one of the following:

1. request for additional information or modification; or
2. denial of VMP; or
3. approval of VMP.

(d) The VMP may be modified, withdrawn or amended by the applicant through a written request sent by certified mail to the Department.

(e) Resubmission of a denied VMP, updating of a VMP, or a significant amendment to an approved VMP shall be processed according to 333 CMR 11.05.

(f) The applicant must send a copy of the approved VMP, or an Internet address where the VMP may be viewed and a note that a hard copy will be provided promptly upon further request, to the chief elected official, Board of Health, and Conservation Commission in each municipality covered by the plan.

(5) Time for Action. Non-action by the Department on a VMP within the time specified herein does not constitute approval of the submitted plan. In the event that the Department fails to notify the applicant of a decision within the time specified above and upon written request from the applicant, the Commissioner must issue a finding within ten days of receipt stating the reason for the delay and providing an estimated completion date.

11.6 : Yearly Operational Plan (YOP)

(1) General.

(a) The applicant is responsible for the accuracy and completeness of all information submitted with the YOP. The YOP shall be consistent with the objectives of the VMP and shall describe the intended operational program for that calendar year.

(b) The YOP shall be presented on forms and in a format approved by the Department.

(2) Requirements. The YOP shall include but not be limited to the following:

(a) Maps locating the rights-of-way and sensitive areas not readily identifiable in the field;

(b) Herbicides proposed including EPA Registration numbers, application rates, carriers and adjuvants;

(c) Herbicide application techniques and alternative control procedures proposed.

(d) The name, address and phone number of the company which will perform any herbicide treatment;

(e) Identification of target vegetation;

(f) The name, address and phone number of the individual representing the YOP applicant;

(g) Description of methods used to flag or otherwise designate sensitive areas on the right-of-way;

(h) Herbicide Fact Sheets as approved by the Department; and

(i) Procedures and locations for handling, mixing and loading of herbicide concentrates.

(3) Public Notice, Review and Comment.

(a) Upon submittal of the YOP for approval, the Department will publish a notice in the Environmental Monitor. Said notice shall be provided by the applicant and shall include the information on the municipalities through which the rights-of-way pass, a brief description of the intended program, and the procedure for public review and comment.

The Department shall send notification of the publication to the applicant and the appropriate mailing list.

(b) Upon submittal of the YOP to the Department, the applicant shall provide by certified mail under separate cover to the Board of Health, Conservation Commission, chief elected municipal official, and where applicable, the Massachusetts Water Resources Authority and Massachusetts Department of Conservation and Recreation, a copy of the proposed YOP (or an Internet address where the proposed YOP may be viewed and a note that a hard copy will be provided promptly upon request) and the Environmental Monitor notice for the municipality or municipalities in which the herbicide treatment is proposed. Community water suppliers shall receive electronic information or a one page notification by mail which provides details about where to receive more information. The applicant shall maintain copies of the packet sent to municipalities and certified mail receipts. The applicant shall make copies of the packet, certified mail receipts, and any further correspondence regarding hard copies of YOPs in lieu of Internet viewing, available to the Department upon request.

(c) The Department shall allow a 45-day comment period on proposed YOPs, unless extended for good cause, commencing with the publication of the notice in the Environmental Monitor and receipt of the proposed YOP and Environmental Monitor notice by each municipality.

(d) The Department may approve, deny or modify YOPs after the 45-day comment period has expired.

(4) Disposition of YOP.

(a) The applicant shall submit the YOP to the Department at least 90 days prior to the proposed commencement of application to allow completion of the comment and review period.

(b) The Department shall review the YOP to ensure that the YOP is consistent with the approved VMP. Any inconsistencies or deficiencies will be noted by the Department and returned with the YOP to the applicant.

(c) Where practical, the Department shall approve or deny the YOP within 90 days of receipt. The Department will provide notice of the decision to the applicant, municipal agencies and commentators in writing.

(d) The approved YOP in conjunction with the VMP shall govern the application of herbicide for a period not to exceed 12 months in accordance with other laws and regulations of the State and Federal governments and impose such conditions as necessary to minimize the risk of adverse effects on human health and the environment.

(5) Time for Action. Non-action by the Department on a YOP within the time specified herein does not constitute approval of the submitted plan. In the event that the Department fails to notify the applicant of a decision within the time specified above and upon a written request from the applicant, the Commissioner must issue a finding within ten days of receipt stating the reason for the delay and providing an estimated completion date.

11.7 : Public Notification

(1) At least 21 days in advance of application of herbicide to a right-of-way in any city or town, the applicant shall notify the Department, the board of health and the local public water supplier and, by registered mail, the mayor, city manager or chairman of the board of selectman, and the conservation commission in the municipality where the right-of-way lies. The notice shall include the following information: the approximate dates on which such herbicide application shall commence and conclude, provided however, that said application shall not commence more than ten days before nor conclude more than ten days after said approximate dates; the method and locations of application; a Department-approved Herbicide Fact Sheet on the active ingredient(s) of the herbicide(s) used; the EPA registration number(s) for the herbicide(s) used; the name, title, business address and phone number of the certified commercial applicator or licensed applicator, or the contractor, employer or employees responsible for carrying out the application. Where specific information required for this notice is already contained in the current YOP that is on file with the local official, the applicant may incorporate the appropriate pages of the YOP by reference in its notice to that official, indicating that these pages are also directly available from the applicant upon request.

(2) This public notice may run concurrently with the public notice and comment period in 333 CMR 11.06(3), provided that the notice is distributed at least 21 days prior to the herbicide application, and that, prior to the herbicide application, the public notice and comment period has closed and the Department has granted YOP approval without modifications. When the Department's final approval requires modifications or application dates are selected after YOP approval, separate notice under 333 CMR 11.07(a) is required.

(3) At least 48 hours prior to the application referred to in 11.07(a), the applicant must publish a conspicuous notice in at least one newspaper of general circulation in the city or town where the right-of-way lies. The notice must appear in the local section of the newspaper and measure at least four by five

inches in size. The notice shall contain the following information: the method and locations of pesticide application; the approximate dates on which the pesticide application shall commence and conclude, provided that the applications shall not commence more than ten days before nor conclude ten days after said approximate dates; a list of potential pesticides to be used; a description of the purpose of the application; and the name, title, business address and phone number of a designated contact person representing the applicant from whom any citizen may request further information. The notice should apply only to the calendar year in which the notice is published. Upon request the notice must be made available to the Department.

11.8 : Notice of Modification and Revocation

(1) The Department may suspend approval of any VMP or YOP, by written notice to the applicant and applicator, halting the application of herbicide to that right-of-way of the above mentioned YOP. After 21 days if the applicant does not request a hearing, the Department may revoke or modify the VMP and YOP, if it finds:

- (a) that the terms, conditions of restrictions thereof, are being violated or are inadequate to avoid unreasonable adverse effects on the environment or on human health; or
- (b) that the applicant has made a false or misleading statement or has not provided information requested by the Department or Rights-of-Way Advisory Panel; or
- (c) that the applicant has violated any provision of the Massachusetts Pesticide Control Act or FIFRA, or any regulations, standards, orders or license issued under either.

(2) Upon notice of revocation or modification, the applicant may modify the YOP by written request to the Department. Applications to modify the YOP shall be submitted in the manner set forth in 333 CMR 11.06 and disposed of in the manner set forth in 333 CMR 11.06. The Department may waive all or part of the requirement if it determines that the proposed changes do not significantly change the terms of the approved YOP.

11.9 : Rights of Appeal

Any person aggrieved by the decision of the Department to approve, deny, modify or revoke a VMP or YOP may request an adjudicatory hearing. The request for a hearing must be received by the Department within 21 calendar days after receipt of the decision. The request should state clearly and concisely the facts of the proceeding, the reasons the decision is alleged to be inconsistent with 333 CMR 11.00 and the relief sought by the adjudicatory hearing. The adjudicatory hearing before the Pesticide Board shall be conducted in accordance with the informal rules of adjudicatory proceeding as set forth in the regulations promulgated pursuant to M.G.L. c. 30A.

11.10: Penalties

Any person who violates any provision of 333 CMR 11.00 shall be subject to the criminal and civil penalties set forth in M.G.L. c. 132 B, § 14.

11.11: Rights-of-Way Advisory Panel

(1) A Rights-of-Way Advisory Panel shall be established to advise the Department on issues relating to 333 CMR 11.00 and to fulfill specific functions as detailed within 333 CMR 11.00.

(2) The Department shall request that the following members participate on the Rights-of-Way Advisory Panel: the Commissioners/Secretaries or his/her designee of the Department of Environmental Protection, the Department of Public Health, and the Executive Office of Transportation and Construction; and a representative of each of the following, all to be appointed by the Department Commissioner: the Massachusetts Association of Conservation Commissions, the Massachusetts Association of Health Boards, the Massachusetts Department of Conservation and Recreation, and an Environmental Advocacy Organization Representative, a member of the University of Massachusetts Extension who is well versed in weed science and Integrated Pest Management of weeds, a representative of the Massachusetts Railroad Association, a representative of a utility company, and a commercial pesticide applicator.

(3) Non-agency representatives shall remain on the panel for a term of five years. Any member absent from two or more consecutive meetings may be removed from the Advisory Panel at the discretion of the Commissioner of the Department, and a replacement requested from the representative agency, industry group, or association.

(4) The Advisory Panel shall meet at least once each year, and shall hold further meetings upon the request of the Department of Agricultural Resources or at the request of any two members of the Advisory Panel.

(5) All Advisory Panel members shall serve without compensation.

Appendix 2

List of Municipalities through which National Grid Manages Rights-of-Way

Adams	Gardner	Middleton	Shelburne
Amesbury	Georgetown	Milford	Shirley
Andover	Gill	Millbury	Shrewsbury
Ashburnham	Gloucester	Millville	Shutesbury
Athol	Grafton	Monroe	Somerset
Attleboro	Granby	Monson	Southborough
Auburn	Great Barrington	Montague	Southbridge
Ayer	Greenfield	Newbury	Spencer
Barre	Groton	Newburyport	Sterling
Belchertown	Groveland	New Salem	Stockbridge
Bellingham	Hampden	North Adams	Sturbridge
Berlin	Hancock	Northampton	Sunderland
Bernardston	Hardwick	North Andover	Sutton
Beverly	Harvard	North Attleborough	Swampscott
Billerica	Haverhill	Northborough	Swansea
Blackstone	Heath	Northbridge	Templeton
Boxford	Hingham	North Brookfield	Tewksbury
Boylston	Holbrook	North Reading	Topsfield
Brimfield	Holden	Norton	Tyngsborough
Brookfield	Hopedale	Oakham	Upton
Buckland	Hubbardston	Orange	Uxbridge
Charlemont	Hull	Oxford	Wakefield
Charlton	Lancaster	Palmer	Ware
Chelmsford	Lanesborough	Paxton	Warren
Cheshire	Lawrence	Peabody	Warwick
Clarksburg	Lee	Pelham	Webster
Clinton	Leicester	Pepperell	Wendell
Colrain	Lenox	Petersham	Wenham
Conway	Leominster	Phillipston	Westborough
Danvers	Leverett	Plainville	West Boylston
Deerfield	Leyden	Princeton	West Brookfield
Dighton	Littleton	Randolph	Westford
Douglas	Lowell	Reading	Westminster
Dracut	Ludlow	Rehoboth	West Newbury
Dudley	Lunenburg	Revere	West Stockbridge
Dunstable	Lynn	Richmond	Weymouth
East Brookfield	Lynnfield	Rockport	Wilbraham
Easthampton	Malden	Rowe	Williamstown
East Longmeadow	Mansfield	Rowley	Wilmington
Egremont	Marlborough	Royalston	Winchendon
Erving	Medford	Rutland	Worcester
Everett	Medway	Salem	Wrentham
Fitchburg	Melrose	Salisbury	
Florida	Mendon	Saugus	
Foxborough	Merrimac	Seekonk	
Franklin	Methuen	Sheffield	

Appendix 3
Chapter 132B

Statutes - Pesticides

MGL 132B Massachusetts Pesticide Control Act

Chapter 132B: Section 1. Title; purpose.

Section 1. This chapter shall be known and may be cited as the Massachusetts Pesticide Control Act.

The purpose of this chapter is to conform the laws of the commonwealth to the Federal Insecticide, Fungicide, and Rodenticide Act, Public Law 92-516, as amended, and the regulations promulgated thereunder and to establish a regulatory process in the commonwealth. The exclusive authority in regulating the labeling, distribution, sale, storage, transportation, use and application, and disposal of pesticides in the commonwealth shall be determined by this chapter.

Chapter 132B: Section 2. Definitions.

Section 2. Unless the context clearly requires otherwise, when used in this chapter, the following words and phrases shall have the following meanings:^a

"Active ingredient", in the case of a pesticide other than a plant regulator, defoliant, or desiccant, an ingredient which prevents, destroys, repels, or mitigates any pest; in the case of a plant regulator, an ingredient which through physiological action accelerates or retards the rate of growth or rate of maturation or otherwise alters the behavior of ornamental or crop plants or the products thereof; in the case of a defoliant, an ingredient which causes the leaves or foliage to drop from a plant; and, in the case of a desiccant, an ingredient which artificially accelerates the drying of plant tissue.

"Administrator", the Administrator of the United States Environmental Protection Agency.

"Adulterated", when used with reference to a pesticide, any pesticide the strength or purity of which falls below the professed standard of purity as expressed on its labeling under which it is sold; a pesticide for which any substance has been substituted wholly or in part; or a pesticide from which any valuable constituent has been wholly or in part abstracted.

"Advisory council", a council established by regulations adopted by the department for the purposes set forth in section five.

"Agricultural commodity", a plant, or part thereof, or animal or animal product produced by a person primarily for sale, consumption, propagation, or other use by man or animals.

"Animal", all vertebrate and invertebrate species, including but not limited to man and other mammals, birds, fish and shellfish.

"Certified applicator", an individual who is certified under the provisions of section ten as authorized to use or supervise the use of any pesticide which is classified by the department as being for restricted use.

"Private applicator", a certified applicator who uses or supervises the use of any pesticide which is classified by the department as being for restricted use for purposes of producing any agricultural commodity on property owned or rented by him or his employer or if applied without compensation other than trading of personal services between producers of agricultural commodities on the land of another person.

"Commercial applicator", a certified applicator, whether or not he is a private applicator with respect to some users, who uses or supervises the use of any pesticide which is classified by the department as being for restricted use for any purpose or on any land other than as provided in the preceding paragraph.

"Licensed applicator", an individual who is licensed under the provisions of section ten as authorized to be

present while pesticides classified by the department as being for restricted use are being applied under the direct supervision of a certified applicator, or to use or to be present to supervise the use or land of another for hire any pesticide classified by the department as being for general use.

"Beneficial insects", insects which, during their life cycle, are effective pollinators of plants, are parasites or predators of pests, or are otherwise beneficial.

"Board", the pesticide board, established by section three.

"Commissioner", the commissioner of food and agriculture.

"Defoliant", a substance or mixture of substances intended to cause the leaves or foliage to drop from a plant, with or without causing abscission.

"Department", the department of food and agriculture.

"Desiccant", a substance or mixture of substances intended to artificially accelerate the drying of plant tissue.

"Device", an instrument or contrivance, other than a firearm, intended to hold or dispense a pesticide and used in conjunction with a pesticide, the purpose of which is to trap, destroy, repel, or mitigate any pest or any other form of plant or animal life, other than man and other than bacteria, virus, or other micro-organism on or in living man or other living animals, but not including equipment used for the application of pesticides when sold separately therefrom.

"Director", the pesticides program director established by section four.

"Distribution" or "Distribute", to offer for sale, hold for sale, sell, barter, ship, deliver for shipment, or receive.

"Environment", includes water, air, land, and all plants and man and other living animals therein, and the interrelationships which exist among these.

"Federally registered pesticide", a pesticide which is registered pursuant to FIFRA.

"FIFRA", the Federal Insecticide, Fungicide, and Rodenticide Act, Public Law 92-516, as amended.

"Fungi" or "Fungus", non-chlorophyll-bearing thallophytes of a lower order than mosses and liver-worts, as, for example, rusts, smuts, mildews, molds, yeasts, and bacteria, except those on or in living man or other living animals, and except those in or on processed food, beverages, or pharmaceuticals.

"Imminent hazard", a situation in which the continued use of a pesticide would result in unreasonable adverse effects on the environment.

"Inert ingredient", an ingredient which is not active.

"Insect", a small invertebrate animal generally having the body more or less obviously segmented, for the most part belonging to the class insecta, comprising six-legged, usually winged forms, as for example, moths, beetles, bugs, bees, flies, and their immature stages, and to other allied classes of arthropods whose members are wingless and usually have more than six legs, as for example, spiders, mites, ticks, millipedes, and wood lice.

"Label", the written, printed, or graphic matter, on or attached to, the pesticide or device or any of its containers or wrappers.

"Labeling", all labels and all other written, printed or graphic matter accompanying the pesticide or device

at any time, or to which reference is made on the label or in literature accompanying the pesticide or device, but shall not include publications of the United States Environmental Protection Agency, the United States Department of Agriculture, or Interior, or Health, Education and Welfare, state experiment stations, state agricultural colleges, and other similar federal or state institutions or agencies authorized by law to conduct research or disseminate information in the field of pesticides, except as otherwise provided by regulation of the department.

"Land", land and water areas, including airspace, and structures, buildings, contrivances, and machinery appurtenant thereto or situated thereon, fixed or mobile.

"Licensed pesticide dealer", a person who distributes pesticides classified by the department as being for restricted use or pesticides whose uses or distribution are further restricted by regulations adopted by the department, with the approval of the board.

"Misbranded", (a) in the case of a pesticide or device, if the labeling bears any statement, design, or graphic representation relative thereto or to its ingredients which is false or misleading in any particular;

(b) in the case of a pesticide or device, if it is an imitation of, or is offered for sale under the name of, another pesticide or device;

(c) in the case of a pesticide or device, if any word, statement, or other information required by or under authority of FIFRA or this chapter to appear on the label or labeling is not prominently placed thereon with such conspicuousness, as compared with other words, statements, designs, or graphic matter in the labeling, and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use;

(d) in the case of a pesticide, if it is contained in a package or other container or wrapping which does not conform to standards established pursuant to FIFRA or this chapter;

e) in the case of a pesticide, if it does not contain a label bearing the registration number assigned under FIFRA to each establishment in which it was produced;

(f) in the case of a pesticide, if the labeling accompanying it does not contain directions for use which are necessary for effecting the purpose for which the product is intended and if complied with, together with any requirements imposed under FIFRA or this chapter, is adequate to protect health and the environment;

(g) in the case of a pesticide, if its label does not contain a warning or caution statement which may be necessary and if complied with, together with any requirements imposed under FIFRA or this chapter, is adequate to protect health and the environment;

(h) in the case of a pesticide, if its label does not bear an ingredient statement on that part of the immediate container, and on the outside container or wrapper of the retail package, if there be one, through which the ingredient statement on the immediate container cannot be clearly read, which is presented or displayed under customary conditions of purchase, except that a pesticide is not misbranded if the administrator has permitted the ingredient statement to be placed on another part of the container pursuant to FIFRA;

(i) in the case of a pesticide, if its labeling does not contain a statement of the use classification under which it is registered;

(j) in the case of a pesticide, if there is not affixed to its container, and to the outside container or wrapper of the retail package, if there be one, through which the required information on the immediate container cannot be clearly read, a label bearing the name and address of the producer, registrant, or person for

whom the pesticide is produced; the name, brand, or trademark under which the pesticide is distributed; the net weight or measure of the content, as required by the administrator; and the registration number assigned to the pesticide by said administrator pursuant to FIFRA;

(k) in the case of a pesticide containing any substance or substances in quantities highly toxic to man, unless the label shall bear, in addition to any other matter required by FIFRA or this chapter the skull and crossbones; the word "POISON" prominently in red on a background of distinctly contrasting color; and a statement of practical treatment, first aid or otherwise, in case of poisoning by the pesticide; and (§93) in the case of a pesticide, if its container does not bear a label, as required by the department pursuant to this chapter.

"Nematode", invertebrate animals of the phylum nemathelminthes and class nematoda, that is, unsegmented round worms with elongated, fusiform, or sac-like bodies covered with cuticle, and inhabiting soil, water, plants or plant parts. Nematodes may also be referred to as nemas or eel-worms.

"Person", an individual, association, partnership, corporation, company, business organization, trust, estate, the commonwealth or its political subdivisions, administrative agencies, public or quasi-public corporation or body, or any other legal entity or its legal representative, agent or assign, or a group of persons.

"Pest", an insect, rodent, nematode, fungus, weed, or any other form of terrestrial or aquatic plant or animal life or virus, bacterium, or other micro-organism, except viruses, bacteria or other micro-organisms on or in living man or other living animal, which is declared to be a pest by the administrator or by the department with the approval of the board.

"Pesticide", a substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, and any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant; provided that the term "Pesticide" shall not include any article that is a "new animal drug" within the meaning of section 201 (w) of the Federal Food, Drug and Cosmetic Act (21 U.S.C. s 321 (w)), or that has been determined by the Secretary of the United States Department of Health, Education and Welfare not to be a new animal drug by a regulation establishing conditions of use for the article, or that is an animal feed within the meaning of section 201 (x) of such act (21 U.S.C. s 321 (x)).

"Plant regulator", a substance or mixture of substances intended, through physiological action, to accelerate or retard the rate of growth or rate of maturation, or to otherwise alter the behavior of plants or the produce thereof, but shall not include substances to the extent that they are intended as plant nutrients, trace elements, nutritional chemicals, plant inoculants, and soil amendments. Also, the term "plant regulator" shall not include any nutrient mixtures or soil amendments commonly known as vitamin-hormone horticultural products, intended for improvement, maintenance, survival, health, and propagation of plants, and as are not for pest destruction and are nontoxic, nonpoisonous in the undiluted package concentration.

"Produce", to manufacture, prepare, compound, propagate, process or repackage any pesticide or device.

"Producer", a person who manufactures, prepares, compounds, propagates, processes or repackages any pesticide or device.

"Protect health and the environment" or "protection of health and environment", protection against any unreasonable adverse effects on the environment.

"Registrant", a person who has registered any pesticide pursuant to the provisions of this chapter.

"Under the direct supervision of a certified applicator", unless otherwise prescribed by its labeling, a pesticide shall be considered to be applied under the direct supervision of a certified applicator if it is

applied by a competent person acting under the instructions and control of a certified applicator who is available if and when needed, and who is responsible for the pesticide applications made by that person, even though such certified applicator is not physically present at the time and place the pesticide is applied.

"Unreasonable adverse effects on the environment", an unreasonable risk to man or the environment, taking into account the economic, social and environmental cost and benefits of the use of any pesticide.

"Weed", a plant which grows where not wanted.

"Wildlife", vertebrate animals, excluding man, that are wild by nature, including fish, birds, mammals, reptiles and amphibians.

Chapter 132B: Section 3. Pesticide board.

Section 3. There shall be within the department of food and agriculture a pesticide board which shall consist of the commissioner of environmental protection or his designee, the commissioner of food and agriculture or his designee, the director of the division of food and drugs or his designee, the commissioner of fisheries, wildlife and recreational vehicles or his designee, the commissioner of environmental management or his designee, the commissioner of public health or his designee, and seven persons appointed by the governor one of whom shall have been engaged in the commercial production of a plant-related agricultural commodity for at least the preceding five years on land owned or rented by him, one of whom shall have been an active commercial applicator of pesticides for at least the preceding five years, one of whom shall have expertise in the health effects of pesticide use, one of whom shall be a physician, one of whom shall be experienced in the conservation and protection of the environment, and two of whom shall represent the public at large. The commissioner of food and agriculture or his designee shall be chairman of the board.

The appointive members of the board shall receive fifty dollars for each day or portion thereof spent in the discharge of their official duties and shall be reimbursed for their necessary expenses incurred in the discharge of their official duties. Each appointive member shall be appointed for a term of four years, except for persons appointed to fill vacancies who shall serve for the unexpired term. Any member shall be eligible for reappointment.

The board shall hold an annual meeting in March, and regularly at three other times annually, and from time to time at the call of the chairman or upon the request of any two members.

Seven members of the board shall constitute a quorum. The board may, by vote of a majority of its members then in office, adopt rules and regulations for the conduct of its business. Rules and regulations adopted may be amended or repealed by a two-thirds vote of its members.

The board in addition to other powers conferred in this chapter shall advise the commissioner of food and agriculture with respect to the implementation and administration of this chapter.

The pesticides program director established by section four shall attend meetings of the board, shall serve as secretary thereto, but shall have no vote in its deliberation.

Chapter 132B: Section 3A. Pesticide board subcommittee.

Section 3A. A subcommittee of the pesticide board shall be established and shall be charged with the responsibility of registering all pesticides for use in the commonwealth pursuant to section seven. Said subcommittee shall also be responsible for issuing all experimental use permits pursuant to section eight. Said subcommittee shall consist of five members, the director of the division of food and drugs, who shall act as chairman, the commissioner of the department of food and agriculture or his designee, the commissioner of the department of environmental management or his designee, the commissioner of public health or his designee, and one person appointed by the governor, who shall have been actively engaged in commercial application of pesticides for at least the preceding five years who shall be a

member of the pesticide board. Any person aggrieved by the decision of said subcommittee may appeal any such decision according to the provisions of section thirteen.

Chapter 132B: Section 4. Programs director.

Section 4. The pesticide regulatory functions conferred upon the department under the provisions of this chapter shall be under the administrative supervision of a pesticide programs director who shall be qualified by training and experience to perform such duties. Said director shall be appointed by the commissioner with the approval of the board for a term of five years. Said person shall be eligible for reappointment, but may be removed by the commissioner for cause. The position of director shall not be subject to the provisions of chapter thirty-one or the provisions of section nine A of chapter thirty. If an employee serving in a position which is classified under chapter thirty-one or in which he has tenure by reason of section nine A of chapter thirty shall be appointed director, he shall upon termination of his service as director be restored to the position which he held immediately prior to such appointment or to a position equivalent thereto in salary grade in the same state department; provided, however, that his service in such unclassified position shall be determined by the civil service commission in administering chapter thirty-one. Such restoration shall be made without impairment of his civil service status or tenure under section nine A of chapter thirty and without loss of seniority, retirement, or other rights to which uninterrupted service in such prior position would have entitled him. During the period of such appointment, the person so appointed from a position in the classified service shall be eligible to take any competitive promotional examination for which he would otherwise have been eligible.

Chapter 132B: Section 5. Powers and duties of department.

Section 5. The department with the approval of the board may cooperate and enter into cooperative agreements and contracts with appropriate federal agencies, the agencies of other states, interstate agencies, other agencies of the commonwealth or its political subdivisions, or private or nonprofit organizations in matters related to the purposes of this chapter or FIFRA, and may receive from and dispense to such agencies such funds as may be available for the purposes of this chapter and FIFRA.

The department with the approval of the board shall take all action necessary or appropriate to secure for the commonwealth the benefits of FIFRA and other pertinent federal legislation.

The department with the approval of the board and subject to the provisions of chapter thirty A may from time to time adopt, amend or repeal such forms, regulations and standards as it deems necessary for the implementation and administration of this chapter.

The department with the approval of the board shall by regulation establish and formulate procedures whereby the advice or relevant advisory councils shall be sought incident to the development of policy or the adoption, amendment or repeal of regulations related to the administration of this chapter.

The department may with the approval of the board declare such pests and devices as it deems necessary to be subject to the provisions of this chapter.

Chapter 132B: Section 6. Prohibited distributions, etc.

Section 6. No person shall distribute a pesticide not registered pursuant to the provisions of section seven. This prohibition shall not apply to the transfer of a pesticide from one plant or warehouse to another plant or warehouse and used solely at such plant or warehouse as a constituent part to make a pesticide which is or will be registered pursuant to the provisions of this act; or the distribution of a pesticide pursuant to the provisions of an experimental use permit issued under section eight.

No person shall distribute a pesticide classified by the department as being for restricted use to a person not appropriately certified to use that pesticide. This prohibition shall not apply to the distribution of a pesticide to a competent individual acting under the direct supervision of an individual appropriately certified to use that pesticide.

No person shall distribute a pesticide that is adulterated or misbranded or a device that is misbranded.

No person shall distribute any pesticide unless it is in the registrant's or the producer's unbroken, unopened, and sealed container. This prohibition shall not apply to the repackaging of pesticides because of damage in transit.

No person shall distribute any pesticide that does not conform to any requirement of its registration or permit.

No person shall distribute any pesticide in containers that are unsafe due to damage or design.

No person shall detach, alter, deface, or destroy, wholly or in part, any label or labeling provided for in this chapter or in regulations adopted thereunder, or to add any substance to, or take any substance from, a pesticide in a manner that may defeat the purposes of this chapter or regulations adopted thereunder.

No person shall distribute, handle, dispose of, discard, or store any pesticide or pesticide container in such a manner as to cause injury to humans, vegetation, crops, livestock, wildlife, beneficial insects, to cause damage to the environment, or to pollute or contaminate any water supply, waterway, groundwater or waterbody.

No person shall act in the capacity of, or advertise as, or assume to act as a licensed pesticide dealer unless that person is in possession of a currently valid license issued by the department pursuant to the provisions of section nine. No person possessing a pesticide dealer license shall violate or allow to be violated any term, condition, restriction or provision of said license.

No person shall purchase or use a pesticide that is not registered by the department under the provisions of section seven; provided, however, that this prohibition shall not apply to the use of a pesticide consistent with the terms of an experimental use permit issued by the department under the provisions of section eight.

Chapter 132B: Section 6A. Prohibited activities.

Section 6A. No person shall use a registered pesticide in a manner that is inconsistent with its labeling or other restrictions imposed by the department. No person shall use a pesticide which is the subject of an experimental use permit inconsistently with the terms and conditions of said permit.

No individual certified or licensed as a pesticide applicator shall violate any provision, condition, term or restriction of his certification or license.

No person shall use a pesticide that has been classified by the department as being for restricted use unless he is an appropriately certified private applicator, an appropriately certified commercial applicator, or a competent individual acting under the direct supervision of an appropriately certified applicator.

Chapter 132B: Section 6B. Herbicides; application by utilities; notice.

Section 6B. No gas, electric, telephone or other utility company licensed to do business in the commonwealth shall spray, release, deposit, or apply any herbicide to any land which it owns or as to which it holds an easement or similar right and over which it maintains power, high tension or other lines without first notifying, by registered mail, the mayor, city manager or chairman of the board of selectmen and the conservation commission in the city or town where such land lies twenty-one days prior to such spraying.

The notice shall contain the following information: the approximate dates on which such spraying shall commence and conclude; provided, however, that said spraying shall not commence more than ten days prior nor conclude more than ten days after said approximate dates; the type of herbicide to be used and a copy of all information supplied by the manufacturers thereof to the utility relative thereto; the name and address of the contractor who will make the application for the utility or the name, title and business

address of the employee who will be responsible for carrying out the application if it is to be made by utility company employees.

Chapter 132B: Section 7. Registration.

Section 7. Pesticides, including pesticides that are federally registered may be registered by the subcommittee of the pesticide board for use in the commonwealth.

Each applicant for the registration of a pesticide shall annually file with the subcommittee an application providing thereon such information as said subcommittee shall require. Said subcommittee may require of applicants for pesticide registrations any information that it deems necessary to determine whether, or how, the pesticide should be registered.

An applicant desiring to register or reregister a pesticide shall pay such registration fee, not to exceed twenty-five dollars, as said subcommittee may by regulation require. All pesticide registrations shall be for a period not to exceed one year.

In the event that any person files with said subcommittee an application to reregister a pesticide which is registered on the date of application for reregistration and pays the appropriate fee therewith, such registration shall be deemed to be in effect until the earlier of the following two events shall occur, ninety days have elapsed after the registration was scheduled to expire, or the subcommittee notifies the applicant for reregistration that the registration has been renewed, modified or denied.

If said subcommittee determines that a pesticide, when used in accordance with its directions for use, warnings and cautions and for the uses for which it is registered, or for one or more such uses, or in accordance with a widespread and commonly recognized practice, will not generally cause unreasonable adverse effects on the environment, it may classify the pesticide, or the particular use or uses of the pesticide to which the determination applies, as being for general use.

If said subcommittee determines that a pesticide, when used in accordance with its directions for use, warnings and cautions and for the use for which it is registered, or for one or more of such uses, or in accordance with a widespread and commonly recognized practice, may cause, without additional restrictions, unreasonable adverse effects on the environment, including injury to the applicator, it may classify the pesticide or the particular use or uses to which the determination applies, for restricted use.

Said subcommittee shall register a pesticide if it determines that its composition is such as to warrant the proposed claims for it; its labeling and other material required to be submitted comply with the requirements of this chapter; it will perform its intended function without unreasonable adverse effects on the environment; and when used in accordance with widespread and commonly recognized practice it will not generally cause unreasonable adverse effects on the environment.

As part of the registration of a pesticide, said subcommittee may require that the pesticide be colored or discolored if such requirement is necessary for the protection of health or the environment, may classify for restricted use any pesticide or pesticide use classified for general use under FIFRA, and may include in the registration such conditions of use as it deems necessary.

If at any time it appears that a pesticide registration does not comply with the provisions of FIFRA, this chapter, or rules and regulations promulgated thereunder, or when used as registered, or a pesticide may cause unreasonable adverse effects on the environment, or a registered pesticide is an imminent hazard, the subcommittee as established in section three A, may, forthwith by an order suspend the registration of such pesticide. Notification of such order shall be sent to the applicant and shall be a public record.

Chapter 132B: Section 8. Experimental use permits.

Section 8. Any person may apply to the subcommittee for an experimental use permit for a pesticide. Each applicant for an experimental use permit shall file with the department an application providing thereon such information as the department may require. Each applicant for an

experimental use permit shall pay such registration fee, not to exceed twenty-five dollars, as the department may by regulation require.

The subcommittee may grant an experimental use permit to an applicant therefor if it determines that the applicant needs such a permit to accumulate information necessary to register a pesticide.

The subcommittee shall refuse to grant an experimental use permit if it believes that the pesticide applications to be made under the proposed terms and conditions may cause unreasonable adverse effects on the environment, or if it believes that the applicant or person to conduct the experimentation is not competent to conduct such experimentation without causing unreasonable adverse effects on the environment.

The subcommittee shall revoke any experimental use permit, at any time, if it believes that its terms or conditions are being violated, or that its terms and conditions are inadequate to avoid unreasonable effects on the environment.

Chapter 132B: Section 9. Dealers' licenses.

Section 9. A person may apply to the department to be a licensed pesticide dealer. Said applicants shall submit to the department a statement supplying such information thereon as the department may require. An applicant for such a license shall pay such registration fee, not to exceed twenty-five dollars, as the department may by regulation require, for each principal distribution center, branch outlet, or direct sales representative of an out-of-state distributor.

In the event that any person files with the department an application to renew a pesticide dealer's license which is in effect on the date of application for renewal and pays the appropriate fee therewith, such license shall be deemed to be in effect until the earlier of the following two events shall occur: ninety days have elapsed after the license was scheduled to expire; or the department notifies the applicant for renewal that the license has been renewed, modified or denied.

The department shall grant a pesticide dealer's license for a term not to exceed one year. The department shall grant such licenses subject to such terms, conditions and restrictions as it deems necessary or appropriate.

The department shall refuse to grant a pesticide dealer's license if it finds that the proposed distributor or his agent has acted in a manner inconsistent with the purposes for requirements of this chapter or FIFRA.

The department shall revoke any pesticide dealer's license, at any time, if it finds that its terms, conditions or restrictions are being violated or are inadequate to avoid unreasonable adverse effects on the environment.

As part of its determination to refuse to grant, or to revoke, a pesticide dealer's license the department may specify a period, not to exceed two years, within which the applicant may not reapply for a pesticide dealer's license. In the event that the department has specified a period for nonapplication, the department may later, at its discretion, shorten or waive such period.

Chapter 132B: Section 10. Certificates and licenses; issuance, suspension and revocation.

Section 10. Certifications and licenses to use pesticides may be issued to individuals by the department in accordance with the provisions, standards and procedures contained in and established pursuant to this chapter. Each certification and license issued pursuant to this section shall be valid only for the individual to whom it is issued, may not be transferred, and shall not continue in force and effect after the death of the individual to whom it is issued. All certifications and licenses shall be for a period not to exceed one year, unless sooner revoked or suspended.

The department may authorize individuals to use pesticides in classifications as a certified commercial applicator, a certified private applicator, and a licensed applicator provided, however, that the department shall require that all persons who are applicators of pesticides in public and private places used for

human occupation and habitation, except residential properties with three or less dwelling units, shall be so licensed or certified with such special designation.

The department may establish such categories and subcategories as it deems necessary to restrict or condition the scope of pesticide use permitted within each classification. The department may establish such standards and criteria, take such action and impose such requirements as it deems necessary to determine or redetermine levels of competence and experience to qualify for each classification and each category and subcategory thereof.

Each applicant for a certification or license shall annually file with the department an application providing thereon such information as the department may require.

Each applicant desiring to be certified or licensed shall annually pay such application fee, not to exceed twenty dollars, as the department may by regulation require.

In the event that any individual files with the department an application to renew a certification or license which is in effect on the date of the application for renewal and pays the appropriate fee therewith, such certification or license shall be deemed to be in effect until the earlier of the following two events shall occur: ninety days have elapsed after the certification or license was scheduled to expire; or the department notifies the applicant that the certification or license has been renewed, modified or denied.

The department may issue a certification or license to an applicant therefor if it determines that the applicant satisfies the criteria established for that certification or license and the category or subcategory for which the certification or license is sought. The department may thus issue a certification or license subject to such terms, conditions, restrictions and requirements as it deems necessary. The department may require that an applicant for a certification or license has obtained and maintains in effect a contract of liability insurance conforming to regulations established by the department.

The department shall prior to issuing a certificate or license evaluate each applicant to determine his competence with respect to the use and handling of pesticides, or to the use and handling of the pesticides or class of pesticides covered or to be covered by said individual's certification or license. Said evaluation shall include such examinations as the department may require. Examinations may be taken only upon payment of a fee, not to exceed ten dollars for each examination given, as the department may require by regulation approved by the board.

The department may revoke, suspend, cancel or deny any certification or license, or any class thereof, at any time, if it believes: that the terms or conditions thereof are being violated or are inadequate to avoid unreasonable adverse effects on the environment, or that the holder of or applicant for the certification or license has violated any provision of this chapter or FIFRA or any regulation, standard, order, license, certification or permit issued thereunder or that the holder or applicant for said certification or license is not competent with respect to the use and handling of pesticides, or to the use and handling of the pesticides or class of pesticides covered by said individual's certification or license. Any person whose certification or license is suspended or revoked hereunder shall also be subject to such other punishment, penalties, sanctions or liabilities as may be provided by law. As part of its determination to refuse to grant, to revoke, or to suspend a certification or license the department may specify a period, not to exceed two years, within which the applicant may not reapply for a certification or license. In the event that the department has refused to issue or has revoked or suspended such a certification or license, and has specified a period for non-application, the department may later, at its discretion, shorten or waive such period.

The department may, at its discretion, appropriately license or certify any person possessing a valid certification or license, or equivalent rating, issued by the pesticide control agency of any other state or the federal government whose standards for the issuance of such rating are not less stringent than those of the department, provided that the pesticide control agency of that state extends similar privileges to persons so licensed or certified by the commonwealth. Any person so licensed or certified shall be subject to the annual fee requirements of this section.

Chapter 132B: Section 11. Protection of health and environment; regulations.

Section 11. The department shall by regulation establish such restrictions and prohibitions upon the disposal and storage of pesticides, packages and containers of pesticides, and materials used in the testing or application of pesticides as it deems necessary to protect health and the environment.

Chapter 132B: Section 12. Departmental orders; hazards; adverse environmental effects; violations.

Section 12. Whenever it appears to the department that there is an imminent hazard, or a potential threat of unreasonable adverse effect on the environment, or a violation or a potential violation of any provision of this chapter or of any license, certification, permit, order, registration or regulation issued or adopted thereunder, the department may issue to such persons as it deems necessary an order requiring the production of samples and records, or an order imposing restraints on or requiring such action, as it deems necessary. Issuance of an order under this section shall not preclude and shall not be deemed an election to forego any action to recover for damages to interests of the commonwealth or, under section fourteen of this act, for civil penalties or for criminal fines and penalties.

Chapter 132B: Section 13. Adjudicatory hearings.

Section 13. Any person aggrieved by a determination by the department to register or not to register a pesticide, to suspend a pesticide registration, to issue, not issue or revoke an experimental use permit, to issue, deny, revoke or suspend any certification or license, or to issue an order, made under the provisions of this chapter, may request an adjudicatory hearing before the board under the provisions of chapter thirty A. Said determination shall contain a notice of a right to request a hearing and may specify a time limit, not to exceed twenty-one days, within which said persons may request a hearing before the board under the provisions of said chapter thirty A. If no such request is timely made, the determination shall be deemed assented to. If a timely request is received, the board shall within a reasonable time hold a hearing and comply with the provisions of said chapter thirty A. In hearings so held the board shall designate a hearing officer to preside over the hearing, to assemble an official record thereof, and to render a tentative decision as provided in paragraph (7) of section eleven of said chapter thirty A. The board shall make the final decision on the basis of the official record and tentative decision so rendered.

If, in making a determination which under the provisions of the preceding paragraph may be the subject of an adjudicatory hearing, the department finds that an imminent hazard or an unreasonable adverse effect on the environment could result pending the conclusion of the adjudicatory hearing requested thereon, the department may order that the determination shall become provisionally effective and enforceable immediately upon issuance, and shall remain so notwithstanding and until the conclusion of any adjudicatory hearing procedures timely requested. In the event that the department has thus made a determination provisionally effective, it may later, at its discretion, shorten the duration of or waive such order.

As part of a final decision in an adjudicatory proceeding held under the provisions of this section, the board may specify a reasonable time period within which the matter may be barred from further proceedings before the department or the board. In the event that the board has so specified a time period, the board may later, at its discretion, shorten or waive such period.

A person aggrieved by a final adjudicatory determination of the board may obtain judicial review thereof pursuant to the provisions of chapter thirty A.

Chapter 132B: Section 14. Violations; penalties; injunctions.

Section 14. Any person who knowingly violates any provision of section six shall be punished by a fine of not more than twenty-five thousand dollars, or by imprisonment for not more than one year, or both such fine and imprisonment, for each such violation, or shall be subject to a civil penalty not to exceed twenty-five thousand dollars for each such violation, which may be assessed in an action brought on behalf of the commonwealth in any court of competent jurisdiction. Each day of violation shall constitute a separate offense.

Any person who violates any provision of section six A or six B or who violates any regulation adopted under the provisions of this chapter, (a) shall be punished by a fine of not more than one thousand dollars, or imprisonment for not more than six months, or both such fine and imprisonment, for the second and each subsequent offense knowingly committed, or (b), shall be subject to a civil penalty not to exceed ten thousand dollars for any offense, which may be assessed in an action brought on behalf of the commonwealth in any court of competent jurisdiction. Each day of violation shall constitute a separate offense.

Any person who violates any order issued under the provisions of this chapter, (a) shall be punished by a fine of not more than twenty-five thousand dollars or imprisonment for not more than two years, or both such fine and imprisonment, for each violation knowingly committed, or (b) shall be subject to a civil penalty not to exceed twenty-five thousand dollars for each violation, which may be assessed in an action brought on behalf of the commonwealth in any court of competent jurisdiction. Each day of violation shall constitute a separate offense.

The superior court shall have jurisdiction to enjoin violations of, or grant such relief as it deems necessary or appropriate to secure compliance with, any provision of this chapter or the terms of an order, license, certification, registration, permit or regulation issued or adopted thereunder.

Chapter 132B: Section 15. Departmental personnel, agents and inspectors; powers; evidence; confidential information.

Section 15. For the purpose of administering the provisions of this chapter, personnel or agents of the department and its inspectors shall have access and entry at reasonable times to any premises pursuant to a search warrant duly issued by a court of competent jurisdiction, provided that no sample of a pesticide obtained in the course of such inspection and no result of any analysis or test of any such sample shall be received in evidence in any criminal proceeding under this chapter unless the sample shall have been taken and the analysis or test conducted by a chemist in the agricultural extension service of the University of Massachusetts authorized by the department. Personnel or agents of the department may take such samples as are reasonably necessary to accomplish the purpose of their investigation and inspection. Any information relating to secret processes, methods of manufacture, production or use obtained in the course of such inspection shall be kept confidential upon request, when not required to be disclosed incident to the enforcement of this chapter. This section shall not be construed to abrogate any of the powers and duties, as defined by general or special law or common law, of any agency or political subdivision of the commonwealth.

Appendix 4

Chapter 85, Section 10

CHAPTER 85 OF THE ACTS OF 2000

SECTION 10.

Said chapter 132B is hereby further amended by striking out section 6B, as appearing in the 1998 Official Edition, and inserting in place thereof the following section:

Section 6B.

- a. No gas, electric, telephone or other utility company licensed to do business in the commonwealth, nor any agency of the commonwealth or any of its political subdivisions, nor any authority, as defined in section 39 of chapter 3, nor any private entity or their agent, shall spray, release, deposit or apply any pesticide to any land which it owns, or as to which it holds an easement or similar right and over which it maintains power, high tension or other lines, or to any roadway, railway, or other transportation layout, without first notifying the department and, by registered mail, the mayor, city manager or chair of the board of selectmen and the conservation commission in the city or town where such application is to occur 21 days before such spraying, release, deposit or application, and without first publishing conspicuous notice in at least one newspaper of general circulation in each city or town where such land lies at least 48 hours prior to such spraying, release, deposit or application. Such notice shall appear in the local section of the newspaper and measure at least four by five inches in size. The published notice shall include: the method and locations of pesticide spraying, release, deposit or application; the approximate dates on which spraying, release, deposit or application shall commence and conclude, but such spraying, release, deposit or application shall not commence more than ten days before nor conclude more than ten days after such approximate dates; a list of potential pesticides to be used; a description of the purpose of the spraying, release, deposit or application; and the name, title, business address and phone number of a designated contact person from whom any citizen may request further information.
- b. The notice to the city or town where the affected land lies shall contain the following information: the method and locations of pesticide spraying, release, deposit or application; the approximate dates on which such spraying, release, deposit or application shall commence and conclude, but such spraying, release, deposit or application shall not commence more than ten days before nor conclude more than ten days after such approximate dates; the type of pesticide to be used and a copy of all information supplied by the manufacturers thereof relative to the pesticide; a department-approved fact sheet and United States Environmental Protection Agency registration number for each pesticide; the name, title, business address and phone number of the certified commercial applicator, certified private applicator or licensed applicator, or the contractor, employers or employees responsible for carrying out the pesticide spraying, release, deposit or application.
- c. Notwithstanding any other provision of law, all agencies of the commonwealth and all authorities, as defined in section 39 of chapter 3, shall develop policies to eliminate or, if necessary, reduce the use of pesticides for any vegetation management purpose along any roadway.
- d. Any employee of any state agency, or authority, as defined in section 39 of chapter 3, when spraying, releasing, depositing or applying pesticides, supervising the use of pesticides, or when present during the spraying, release, deposit or application of pesticides, shall be provided with personal protection equipment and clothing in conformance with all federal and state laws and regulations pertaining to pesticide applications. This shall include, but not necessarily be limited to, protections according to Material Safety Data Sheets (MSDS), the product label, and any other supportive technical data provided by the manufacturer.

Appendix 5

Department of Food and Agriculture Wetland Decision



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF FOOD AND AGRICULTURE
100 CAMBRIDGE ST., BOSTON, MA 02202 617-727-3000 FAX 727-7235

WILLIAM F. WELD
Governor

ARGEO PAUL CELLUCCI
Lt. Governor

**Decision Concerning
The Wetland Impact Study Conducted
Pursuant to 333 CMR 11.04(4)(c)(2)**

TRUDY COXE
Secretary

JONATHAN L. HEALY
Commissioner

**PUBLIC UTILITY VEGETATION
MANAGEMENT PROGRAM FINDING**

Background

The Rights of Way Management (ROW) Regulations (333 CMR 11:00) promulgated in 1987 prohibit the use of herbicides to control vegetation along utility right of ways on or within ten (10) feet of a wetland unless the following conditions are met:

1. Submission of a study, the design of which is subject to prior review and approval of the Departments of Food and Agriculture and Environmental Protection, evaluating impacts of proposed vegetation management programs on wetlands; and
2. A finding by the Department, after consultation with the Advisory Committee, that the proposed vegetation management program will result in less impacts to the wetland than mechanical control.
3. Notwithstanding the above, no herbicides shall be applied on or within ten feet of any standing or flowing water in a wetland.

On April 28, 1988, The Departments of Food and Agriculture and Environmental Protection approved the scope of the study. In the fall of 1989, Environmental Consultants, Inc. submitted to the Department of Food and Agriculture the study entitled, "Study of the Impacts of Vegetation Management Techniques on Wetlands for Utility Rights-of Way in the Commonwealth of Massachusetts", dated June 1989. The Department consulted with the Vegetation Management Plan (VMP) Advisory panel at their November 15, 1989, December 7, 1989 and August 1, 1991 meetings.

The study provided some broad information of vegetation control along utility right of ways. The Department based its finding solely upon the narrow scope of whether the "proposed vegetation management program will result in less impacts to the wetland than mechanical control."

The following are the major evaluation points the Department considered in reaching its decision.

What are the Long-term and Short-term Impacts From Herbicide use and Mechanical Control?

Since wetlands are not a static, unchanging resource, there is some difficulty in determining the actual long-term impacts from the various vegetation control practices. The extent of wetland alterations must be the most important factor in determining impacts. With limited or selective removal of unwanted plant species in specific locations, it appears that long-term impacts are negligible. While mowing or foliar application can damage non-target species, neither control practice appears to result in adverse long-term impacts if they are carefully executed. Clear cutting, however, has a greater impact on wetlands since both wanted and nuisance species are removed.

Although there were some reservations about the sites that were chosen to determine the level of chemical residues, the study did show that there was not a buildup of background residues of herbicides applied from previous practices. However, there were some trace amounts of petroleum products - bar oil or hydraulic fluid found. The source of these petroleum products is unclear and may have been the result of public activities not related to vegetation management. Retrospective analyses for herbicide residues in previously treated wetland areas is not generally applicable since the herbicides used today are less persistent than those which were used previously. However, these analyses did indicate that the herbicides used in the past do not persist in the environment.

The study clearly demonstrated that adjacent non-controlled wetland areas did not differ significantly in composition and abundance of plant species from the controlled areas. The control practices did not appear to impact the entire wetland ecosystem, since a long-term comparison of wetland plant species composition between controlled and non-controlled sites did not differ significantly. Therefore, the long-term effects on the entire wetland ecosystem were considered negligible.

The determination of the short-term impacts to the wetland from the control practices was the most noted short-coming of the study. However, this was not part of the original scope. The VMP Advisory Panel felt, and the Department agreed, that a short-term environmental fate study would be needed.

The first study indicated that certain mechanical control practices can impact wetlands and disrupt the ecosystem to a greater extent than the judicious use of herbicides. While cutting may result in re sprouting of some unwanted vegetation in a manner unlikely to be encountered in unaltered wetland areas, unregulated mechanical vegetation control could result in the destruction of other non-target plant species.

What is the Impact to Non-target Wetland Plant Communities?

Basal and cut stump treatment with low mobility, short persistence herbicides that are judiciously applied usually do not impact adjacent plant species. Likewise careful selective mechanical cutting (versus mowing or clear cutting) also usually does not impact non-target wetland plants. The greatest potential risk to non-target wetland plants comes from mowing, clear-cutting, and high volume foliar applications. Low volume foliar applications in wetlands may also cause non-target impacts if application guidelines are not followed (e.g. no applications during high winds, or without using anti-drift agents, etc.).

Is There Enough Information on Which to Base a Finding?

As in most environmental assessments, a complete database is not available to answer all of the questions posed by the Department and the Vegetation Management Advisory Panel. Some of the questions posed were entirely valid, but were beyond the scope of the approved study.

The study did provide some clear evidence that selective mechanical and herbicide use does minimally alter wetlands by removing specific plant species. Mechanical mowing operations, however, can result in far greater short-term and potentially long-term impacts to wetlands since both wanted and un-wanted plant species are indiscriminately removed. Additionally, foliar herbicide applications may cause short-term impacts to non-target species.

The Department did not find any significant difference in wetland impacts between careful mechanical removal (selective hand cutting) of unwanted species

and, cut stump or basal treatment with herbicides.

There is no assurance that prohibiting the use of herbicides in wetlands will result in careful mechanical control. If herbicide use is prohibited in wetland areas, mechanical control in wetlands will be the only practice available to utilities. Financial pressures and other considerations may force Utilities to increase mowing and / or the use of more destructive non-chemical control practices due to a lack of alternative control techniques.

On August 29, 1991, the Department made a finding that the submitted study met the approved scope. However, although the study contained useful information, it was also determined that additional data needed to be gathered and analyzed because the study was inconclusive in a number of instances.

The Department issued a finding that a proposed vegetation program containing the specific elements listed does not pose an unreasonable adverse impact to wetlands. In addition, the Department required a study be conducted to provide important environmental fate data necessary for the long-term implementation of the rights of way program.

AUGUST 1991 FINDING

The Department of Food and Agriculture finds that a proposed vegetation program containing the following elements will not pose an unreasonable adverse impact to wetlands:

1. *The Integrated pest Management (IPM) system, as described in the Vegetation Management Plan and Yearly Operation Plan, is utilized in wetland areas. The IPM system must, at a minimum, place emphasis on encouraging low growth plant species to discourage unwanted vegetation and, minimizing the frequency and amount of herbicide use by only controlling specific non-conifer tree species which will impact transmission line operation and access to the right of way.*
2. *Herbicides may be applied by basal, cut stump or low volume foliar methods. Foliar applications must include the use of drift reduction agents. Foliar applications may only be conducted in situations where basal and cut stump treatments are not appropriate based on the size of the vegetation and potential for off-target drift. Foliar applications must not result*

in the off-target drift to non-target species.

3. *Herbicides are not applied to conifer species (pine, spruce, fir, cedar and hemlock).*
4. *Carriers for herbicides do not contain any of the following petroleum based products: jet fuel, kerosene or fuel oil. Carriers will be subjected to review by the Department of Food and Agriculture and DEP through 333 CMR 11.04(1)(d).*
5. *Herbicides must be recommended by the Department of Food and Agriculture and DEP through 333 CMR 11.04(1)(d).*
6. *Herbicides may only be applied by hand operated equipment containing no more than 5 gallons of diluent.*
7. *All other restrictions within sensitive areas remain in effect. In accordance with 333 CMR 11.04(1)(c), no person shall apply herbicides for the purposes of clearing or maintaining a right-of-way in such a manner that results in drift to any areas within 10 feet of standing or flowing water in a wetland or area within 400 feet of a public drinking water supply well; or area within 100 feet of any surface water used as a public water supply; or area within 50 feet of a private drinking water supply identified under 333 CMR 11.04(2)(c)(3).*
8. *Approved Vegetation Management Plans and Yearly Operation Plans must be amended as needed to reflect the conditions of this FINDING.*
9. *The Department further requires that environmental fate data be provided by the utilities that are applying herbicides to rights-of-way, which characterizes the movement of herbicides applied to wetland areas under these conditions. The Department further requires that all study protocols be reviewed by the Vegetation Advisory Panel and be approved by the Department of Food and Agriculture and the Department of Environmental Protection. Failure to submit the required information by the dates outlined in the schedule below will render this finding void.*

An approvable scope of the study developed and

submitted by January 1, 1992.

Field data submitted to DFA by October 1, 1992. Data must be consistent with the requirements of the approved scope.

Draft study report submitted to DFA by October 1, 1993.

Final Report submitted to DFA by March 1, 1994.

10. *The Department reserves the right to amend or withdraw its FINDING at anytime if it determines that the use of herbicides in wetland areas poses a greater impact than mechanical control or may pose an unreasonable adverse effect to humans or the environment.*
11. *This finding expires December 31, 1994.*

Therefore, herbicide use may be allowed to control certain vegetation along utility right of ways if the proposed vegetation program as described in the approved Vegetation Management Plan and Yearly Operational Plans contains the above elements.

On, April 27, 1992, the Departments of Food and Agriculture and Environmental Protection approved the scope of the "*Study of Fates of Herbicides in Wetlands on Electric Utility Rights of Way in the Massachusetts Over the Short Term*". The final report was submitted to the Department of Food and Agriculture December 31, 1993. The Department began reviewing the report in consultation with the VMP Advisory panel.

At the end of 1994, the Department had not completed its review. Therefore, on December 22, 1994 the Department extended the current finding for one year (to December 31, 1995) or until such time it is able to make a final determination, whichever occurs first.

Fates of Herbicides Over the Short Term Study

The objective of this study was to determine the short term environmental fate and assess the impacts of selected herbicides applied by four common Right-of-Way management techniques. Additionally, the study evaluated which of the four Right-of-Way management techniques provides the most effective control of target vegetation and which techniques produced the least impact on the non-target plant community, and consequently the least alteration of wooded wetland community.

The study investigated the environmental fate of two herbicides, which are typically used to control vegetation on ROWs, and are included in the list recommended for use in sensitive areas. These herbicides were chosen, among other reasons, for their use patterns, size of area treated, and application rates. Accord, which contains the active ingredient glyphosate, is the primary herbicide used for cut stump treatment and is also used for foliar application. Garlon 4, which contains the active ingredient triclopyr, is the primary herbicide used for basal applications. Collectively these products represent the typical herbicides used to control vegetation on ROWs.

Results

A summary of the most important findings and conclusions of the study include:

* Based upon the samples collected immediately after application, at 1 week, 1 month, 3 months and 1 year:

- The two herbicides, glyphosate and triclopyr degrade rapidly. Residues reach low quantities quickly, often less than detection limits, within a year.; and
- There is essentially no movement either laterally or vertically from the treated sites by glyphosate. Triclopyr does not move laterally, but was noted to move vertically in small amounts.

* Drift cards indicate that the herbicides are neither splashed nor carried any distance by the wind. Glyphosate drift is not a significant problem resulting in slight effects on neighboring vegetation and are not detectable in the next year's growth. Sphagnum moss next to trunks treated basally with triclopyr were killed within three months in a 15 cm diameter circle immediately around the target tree, but the dead circle did not continue to enlarge.

* Filter paper recovered immediately after application of herbicide showed that all methods of application deposit herbicide on the ground. Treated bare soil samples showed as consistent a drop in herbicide concentrations and as little vertical movement as did samples beneath target trees.

* The use of the herbicides glyphosate and triclopyr at the strengths and application rates used does not pose a risk of accumulation in organically rich soils.

* Herbicide concentrations in soil continue to decline as time advances.

* Rainfall occurring more than a week after application does not appear to spread the herbicide nor does groundwater carry any substantial fraction of what has been applied to a particular site down into the soil or horizontally.

* Based upon the results of the study, an assessment of the environmental fate, and observations of both treatment effectiveness and non-target impacts, an effective and environmentally sensitive ranking from most effective and posing least potential environmental risks to least effective and posing the most environmental risk is suggested:

1. Most effective control and exclusive effect on target:
low-volume foliar (with glyphosate).
2. Most consistent control with lethal effects on bordering vegetation:
high-volume foliar (with glyphosate)
3. Total control with rings of dead vegetation around treated trunks:
low-volume basal (with triclopyr)
4. Incomplete target control and leaving largest soil residues:
cut-stump (with glyphosate)

It is important to note that the results of the second short term study suggest that the most efficacious application techniques and which pose the lowest environmental risk were not those recommended in the interim finding.

DEPARTMENT DETERMINATION

Based upon the results of the two ROW impact studies, the general information in the literature, and after consultations with the Vegetation Management Panel, the Department finds that the following proposed vegetation management program will result in less impacts to wetlands than exclusive use of mechanical control methods. Therefore, the Department finds that any vegetation management program that incorporates the conditions under which the study was conducted as well as taking into account the results of previous studies, will result in the least impacts to wetlands.

These conditions include:

1. An Integrated Pest Management (IPM) system, also known as Integrated Vegetation Management (IVM), as described in the Vegetation Management Plan and Yearly Operation Plan is utilized in wetland areas. The IPM system must, at a minimum, place emphasis on encouraging low growth plant species to discourage unwanted vegetation and, minimizing the frequency and amount of herbicide use by only controlling specific non-conifer tree species which will impact transmission line operation and access to the right of way.
2. Herbicides may be applied by low volume foliar, basal, or cut stump methods. Foliar applications must include the use of appropriate drift reduction agents, and must not result in the off-target drift to non-target species. Basal and cut-stump treatments may be conducted in those situations where the size of the vegetation, potential for off-target drift, or other considerations precludes the use of low-volume foliar applications. Cut stump and basal applications shall be restricted, when practicable, to periods when static ground water levels are low or otherwise when conditions are less susceptible to potential contamination.
3. Herbicides are not applied to conifer species (pine, spruce, fir, cedar and hemlock).
4. Carriers for herbicides do not contain any of the following petroleum based products: jet fuel, kerosene or fuel oil. Carriers will be subjected to review by the Department of Food and Agriculture and DEP through 333 CMR 11.04(1)(d).

5. Only herbicides recommended by the Departments of Food and Agriculture and Environmental Protection through 333 CMR 11.04(1)(d) may be used in sensitive areas.
6. Herbicides may only be applied by hand operated equipment containing no more than 5 gallons of diluent.
7. All other restrictions within sensitive areas remain in effect. In accordance with 333 CMR 11.04(1)(c), no person shall apply herbicides for the purposes of clearing or maintaining a right-of-way in such a manner that results in drift to any areas within 10 feet of standing or flowing water in a wetland or area within 400 feet of a public drinking water supply well; or area within 100 feet of any surface water used as a public water supply; or area within 50 feet of a private drinking water supply identified under 333 CMR 11.04(2)(c)(3).
8. A minimum of twelve months must elapse between herbicide treatments. Only touch-up applications may be performed between twelve and twenty four months.
9. Approved Vegetation Management Plans and Yearly Operation Plans must be amended as needed to reflect the conditions of this determination.

.....

Therefore, herbicide use may be allowed to control certain vegetation along utility right of ways if the proposed vegetation program as described in the approved Vegetation Management Plan and Yearly Operational Plans contains the above elements.



 Jonathan Healy, Commissioner

10/12/95

 Date

Appendix 6

Preface to 310 CMR 10.00

310 CMR: DEPARTMENT OF ENVIRONMENTAL
PROTECTION PREFACE TO WETLANDS REGULATIONS RELATIVE TO
RIGHTS OF WAY
MANAGEMENT 1987 REGULATORY REVISION

In 1983, the Massachusetts Pesticide Control Act, M.G.L. c. 132B, was amended to require notification of conservation commissions prior to application of herbicides on rights of way. Many commissions became aware for the first time that application of herbicides on rights of way may result in alteration of wetlands and, with the exception of exempt utilities, may require action under the

M.G.L. c. 131, § 40. On July 18, 1986, the Department issued a final decision after adjudicatory hearing in DEP Hearing Docket Nos. 83-28 and 83-35 (Clinton and Leverett) finding that the application of specific herbicides by the railroads to track and ballast within 100 feet of wetland areas would alter those wetlands and was therefore subject to jurisdiction under M.G.L. c. 131, § 40, requiring the filing of Notices of Intent with the local conservation commissions.

The Department of Food and Agriculture (DFA) initiated a Generic Environmental Impact Report (GEIR) evaluating alternatives for rights of way management. A technical advisory task force of environmentalists, agencies and rights of way managers assisted in the GEIR preparation and, based on results of the study, recommended to the Secretary of Environmental Affairs a framework for a coherent state-wide rights of way regulatory program. DFA published draft regulations to implement this program in 1986 and received extensive public commentary. Final regulations, 333 CMR 11.00, became effective on July 10, 1987.

The DFA regulations require persons proposing to apply herbicides to rights of way to first receive approval of a five year Vegetation Management Plan (VMP) and Yearly Operating Plan (YOP). These regulations identify certain "sensitive areas", including wetlands and public and private surface and groundwater supplies, where the application of herbicides is, in most instances, prohibited, and areas adjacent to the sensitive areas where use of herbicides is curtailed.

DEP worked closely with DFA to include provisions which give maximum protection for water supplies and provide protection for wetlands at least equal to that provided under the M.G.L. c. 131, § 40 and 310 CMR 10.00. To eliminate duplicate review under M.G.L. c. 131, § 40, DEP has adopted changes to the wetlands regulations which allow herbicide applications on rights of way in accordance with the DFA regulations without filing a Notice of Intent under the M.G.L. c. 131, § 40. However, non-exempt applicants will still be required to file a Request for Determination of Applicability to the appropriate conservation commission to establish boundaries of wetlands on or near the right of way. Specifically, these regulations presume that work performed in accordance with a VMP and YOP, as may be required under DFA regulations, will not alter an area subject to protection under M.G.L. c. 131, § 40.

During the public comment period on its proposed regulations, the Department identified several issues of major concern. After consideration of all comments, the Department has determined that, except for minor points of clarification and the addition of an automatic expiration date, no further changes in the regulations are warranted at this time. A discussion of these issues follows.

A. Presumption vs. Limited Project. Several commentators suggested that conservation commissions should retain the authority to review each herbicide application on rights of way through the usual Notice of Intent process. These regulations create a presumption that herbicide application carried out in accordance with an approved VMP and YOP under the DFA regulations will not alter wetlands and that the filing of a Notice of Intent is therefore not required. This procedure was established pursuant to the recommendation of the GEIR task force which states:

The regulations which provide for approval of Vegetation Management Plans by the Department of Food and Agriculture should be conditioned on review and approval by the Department of Environmental Protection (DEP) of those portions of the Plans that deal with wetlands. The DEP should be required to certify to the DFA that these portions of the Plans will result in compliance with the substantive and procedural provisions which protect the interests of the M.G.L. c. 131, § 40. If the regulations are so drawn, activities under a Plan approved by DEP would not constitute an alteration of wetlands as defined under 310 CMR 10.00.

Since the DFA regulations provide that DEP is a member of the VMP advisory panel which reviews and makes recommendations on the approval of VMPs, the GEIR task force recommendations have been fully implemented. Therefore, the Department has determined that it would be duplicative to require the filing of individual Notices of Intent in each municipality for each application of herbicides to rights of way.

B. Adequacy of Setback from Wetlands. The DFA rights of way regulations prohibit application of herbicides on or within ten feet of wetlands and strictly limit herbicide application from ten feet to 100 feet of wetlands. Many commentators questioned the adequacy of these setback requirements and suggested that a 50 or 100 foot no spray zone would be more appropriate. Several commentators suggested that the proposed setback requirements were inconsistent with the Department's adjudicatory hearing decision in the Clinton and Leverett cases.

The no spray zone surrounding wetlands is necessary for three reasons: to compensate for mapping errors, to compensate for applicator errors and to assure that herbicides will not migrate into wetlands after application on the adjacent uplands. During the public comment period, the Department received no evidence demonstrating that the ten-foot setback established in the DFA regulations will not be adequate. The DFA regulations establish a procedure for selecting a limited number of herbicides that may be applied in the limited spray zone (from 10 to 100 feet from wetlands) which is adjacent to the no spray zone. Herbicides that will be selected for use in these limited spray zones under the DFA regulations are those which available data demonstrate will not migrate further than ten feet.

The applicators have argued that they can maintain a level of accuracy in mapping of wetlands and in application of herbicides to assure that herbicides will not be inadvertently applied within ten feet of wetland areas. The Department is not convinced that these claims are unreasonable; however, in order to confirm their accuracy, the Department has included in the final regulations an automatic expiration date two years from the effective date, which is coterminous with the expiration date of the DFA regulations. During the two-year effective period of these regulations, the Department expects applicators to conduct studies monitoring

herbicide application operations and to submit a report concerning impacts of herbicide application on wetlands under these new regulations detailing the accuracy of wetlands mapping, the accuracy of herbicide application, and the extent of herbicide migration. The results of this study will provide a basis for recommendations by the Department for amendments to the DFA regulations and a decision on reauthorization of these amendments to the Department's wetland regulations.

Finally, the Department does not find the setbacks requirements established in the DFA regulations to be inconsistent with its decision in the Clinton and Leverett cases. In that decision, the Department assumed a worst-case analysis in terms of an herbicide known to be highly mobile which was applied to the track and ballast areas adjacent to wetlands. The Department found, based on the particular facts of these cases and the particular herbicide proposed for application that there would be a migration of that herbicide into the wetlands from application within the 100-foot buffer zone that would be sufficiently concentrated to cause alterations of the wetlands plants. However, the DFA rights of way management regulations set up a procedure for identification of herbicides which are relatively immobile and which are preapproved for application on the buffer zone in order to avoid alteration of wetlands plants. Furthermore, guidelines for application of the selected herbicides will also be established. Finally, no herbicides may be applied within ten feet of wetland areas. In light of the strict controls placed on application of herbicides within the 100-foot buffer zone under the DFA regulations, the Department finds that adoptions of the proposed regulatory scheme is fully consistent with its previous adjudicatory hearing decision in the Clinton and Leverett cases.

C. Impacts of Herbicides Application on Wildlife Habitat. The Department is currently developing regulations under M.G.L. c. 131, § 40 to protect wildlife habitat, The effective date of these regulations is November 1, 1987. One commentator expressed concern regarding the impact of herbicide application on wildlife habitat in wetlands, and particularly on the habitat of rare, "state-listed" wildlife species. As discussed above, the Department has determined that the DFA regulations provide for protection of wetlands from alterations due to herbicide application. However, the DFA regulations do not include flood plains in their definition of wetlands, although those regulations do prohibit herbicide application within 10 feet of any standing or flowing surface water. Beyond that, there is no specific protection of wildlife habitat, including rare species, in floodplain areas.

The Department is concerned that the DFA regulations do not specifically address protection of wildlife habitat in floodplains, in particular those rare, "state-listed" wildlife species. Therefore, as a member of the VMP advisory panel, the Department will review VMPs for potential effect on wildlife habitat and specifically will recommend disapproval of any VMP that will have an adverse effect in areas mapped by the Natural Heritage and Endangered Species Program as habitat of any rare, "state-listed" wildlife species. Furthermore, the Department expects applicators to incorporate into the previously discussed two-year monitoring study a section detailing the effects of herbicide application on wildlife habitat in floodplains and on the habitat of rare, "state-listed" wildlife species. The Department will use the results of this study as the basis for recommending any amendments to the DFA regulations and a decision on reauthorization of these amendments to the Department's wetlands regulations.

Appendix 7

Sensitive Areas: Illustrations of No-Spray and Limited Spray Areas

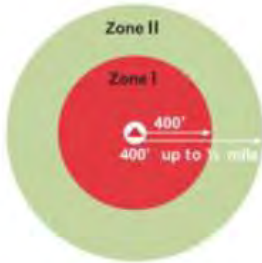
Vegetation Control Strategies in Sensitive Areas

Required by 333 CMR 11.00 and/or approved Vegetation Management Program and Yearly Operational Plan.

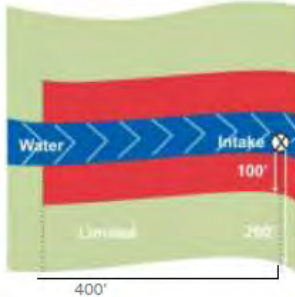
Sensitive areas not readily identified in the field:

- Mapped on electronic USGS Topographic Maps.
- Contractor will be provided electronic and hard copy of maps with which to flag the boundaries of no-spray areas within the right-of-way (ROW) prior to herbicide application.

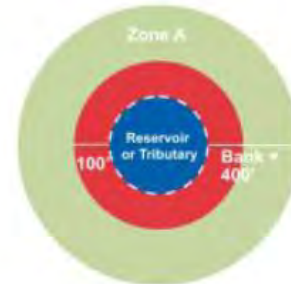
Public Ground Water Supply Well Zone I



Drinking Water Intake Class B



Public Surface Water Source Class A



Identified Private Drinking Water Well



Sensitive areas readily identifiable in the field:

- Consult USGS Topographic Maps
- Contractor will be provided electronic and hard copy of maps with which to flag the boundaries of no-spray areas within the right -of-way (ROW) prior to herbicide application.
- Contractor will mark additional areas not found on maps

Wetlands

Defined by Chapter 131,
Section 40



Surface Waters and Rivers

All surface water and water over wetlands.
Mean high water for rivers.

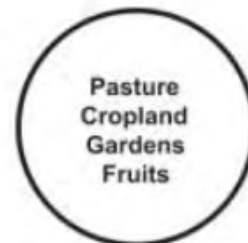


Agricultural Areas

Active - Growing Season



Inactive Agricultural



No Restrictions

Sensitive areas readily identifiable in the field: continued

- Consult USGS Topographic Maps
- Contractor will be provided electronic and hard copy of maps with which to flag the boundaries of no-spray areas within the right-of-way (ROW) prior to herbicide application.
- Contractor will mark additional areas not found on maps

Inhabited Areas

Where people live, work, or gather













Road Crossings



Foliar spray of resprout permitted. National Grid policy

KEY

	= No Herbicide Use			= Limited Herbicide Use
	= Water	1.) Herbicide recommended for use in sensitive area: per (333 CMR 11.04(1)(d)).		
	= Public Ground Water Supply Well or Private Well	2.) Cut stump, basal and <u>low</u> pressure foliar.		
		3.)  24 months elapsed since previous treatment.		
		 12 months elapsed since previous treatment.		
		4.)  No herbicides applied to conifer species and carriers reviewed by DAR and DEP.		
		5.)  Cut stump only.		
		6.)  Cut stump and basal treatments. (Foliar application to resprouts is permitted.) No other conditions.		

Appendix 8

Remedial Plan to Address Spills Form

REPORTABLE SPILLS

(Spills of reportable quantity of material per 310 CMR 40.0000):

FOLLOW STEPS 1-11

NON-REPORTABLE SPILLS:

FOLLOW STEPS 1-4, 7-11 as appropriate & contact the National Grid representative.

Order	ACTION	Done (√)
1	Use any and all PPE as directed by product label or SDS.	
2	Cordon-off spill area to unauthorized people and traffic to reduce the spread and exposure of the spill	
3	Identify source of spill and apply corrective action, if possible stop or limit any additional amounts of spilled product.	
4	Contain spill and confine the spread by damming or diking with soil, clay or other absorbent materials.	
5	Report spills of "reportable quantity" to the Mass. DEP and MDAR:	
	MDAR, Pesticide Bureau	(617) 626-1700
	Massachusetts Department of Environmental Protection, Emergency Response Section (call within 2 hours)	Main Office (24 Hours): (888) 304-1133 Fill in appropriate district office
6	If the spill cannot be contained or cleaned-up properly, or if there is a threat of contamination to any bodies of water, immediately contact any of the following applicable emergency response personnel:	
	local fire, police, rescue	911
	National Grid's Rep: (Listed in YOP)	
	Product manufacturer(s)	
	1	1
	2	2
	3	3
	Chemtrec	(800) 424-9300
	additional emergency personnel	
	If there is a doubt as to who should be notified, contact local State Police Barracks: FILL IN	
7	Remain at the scene to provide information and assistance to responding emergency clean-up crews	
8	Refer to the various sources of information relative to handling and clean-up of spilled product	
9	If possible, complete the process of "soaking up" with absorbent materials	
10	Sweep or shovel contaminated products and soil into leak proof containers for proper disposal at approved location	
11	Spread activated charcoal over spill area to inactivate any residual herbicide	

Appendix 9

Environment Policy

Our strategy is to be a recognised leader in the development and operation of safe, reliable and sustainable energy systems to meet the needs of our customers and communities and to generate value for our investors.

One of the ways we will achieve this is to protect and enhance the environment, always seeking new and innovative ways to lighten the environmental impact of our past, present and future activities.

J. Pettigrew

John Pettigrew
Chief Executive

We commit to:

- Ensuring environmental sustainability is considered in our decision making and creating a sustainable thinking culture.
- Using resources more efficiently through good design, using sustainable materials, responsibly refurbishing existing assets, recovery and recycling.
- Ensuring our operations that have an impact on natural habitats are conducted in a manner to protect biodiversity and seeking ways to enhance the natural value of the area for the benefit of local communities and/or environment.
- Reducing greenhouse gas emissions: 45% by 2020 and 80% by 2050.
- Looking at ways to reduce the impact of climate change by implementing mitigation and adaptation measures.
- Openly reporting on our environmental and sustainability performance with employees, members of the public and other stakeholders.
- Actively working to prevent pollution which may result from our activities.
- Continually improving our environmental management system to protect the environment, reduce the risk of environmental incidents.
- Satisfying our compliance obligations.
- Actively managing the risks associated with sites where we have responsibility for dealing with contamination associated with past operations.
- Ensuring our employees have the training, skills, knowledge and resources necessary to meet our environmental commitments.
- Working with governments and regulators to help them develop and deliver more effective environmental policies and targets.
- Helping consumers reduce their dependency on fossil fuels by providing them with access to more sustainable energy and through innovative energy efficiency programmes.
- Ensuring those working on our behalf demonstrate the same commitment to the environment as we do.



For more details on this policy, visit the SSR Infonet homepage of nationalgrid.com



Appendix 10

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SENSITIVE MATERIALS LIST:

A current list of the *Sensitive Area Materials List* and individual *Fact Sheets* on these herbicides are available at:

<http://www.mass.gov/eea/agencies/agr/pesticides/rights-of-way-vegetation-management.html>

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- Yahner, Richard H. "Wildlife Response to More than 50 years of Vegetation Maintenance on a Pennsylvania U.S., Right-of-Way." Journal of Arboriculture 30(2), March 2004.
- "State Game Lands 33 Research and Demonstration Project—57 years of Continuous Study on the Shawville to Lewiston 230-kV line of First Energy (Penelec). 2009.
- "2009 Annual Report to Cooperators. Green Lane Research and Demonstration Project: 23 Years of Continuous Study." (2009).

To: Mike Tyrrell (National Grid) **Date:** August 23, 2022
From: Heid Graf (BSC Group) **Proj. No.** 89620.66
Re: A1/B2 ACR Project Wetland Delineation- Attachment H Supplemental Wetland Information

cc:

The A1/B2 right-of-way (ROW) and tap line ROWs extend approximately 54 miles in Massachusetts. Surveys for wetland resource areas were conducted within the existing transmission line ROW and proposed off ROW access route locations in the towns of Warwick, Royalston, Athol, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling. Delineations were completed by Vanessa Hangen Brustlin, Inc (VHB) in 2020, and supplemented by BSC Group (BSC) in 2021 and 2022. Field teams used established delineation procedures as outlined in the Massachusetts Department of Environmental Protection's Handbook on Delineating Bordering Vegetated Wetlands (March 1995) ("DEP Handbook") and the United States Army Corps of Engineers (USACE) Wetland Delineation Manual (Environmental Laboratory, January 1987) ("1987 Manual") and the USACE Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (USACE Supplement) (2012).

During the field investigations, VHB and BSC collectively identified and delineated 462 wetland areas, 60 intermittent streams and 68 perennial streams within MA. The existing overhead transmission line ROW contains a variety of wetlands, most of which have been historically affected by the routine vegetation management for the safe operation of the transmission facilities. Wetland communities were identified in accordance with the federal classification system found in Cowardin (1979), and were the following: Palustrine Forested Wetlands, Palustrine Emergent Wetlands, and Palustrine Scrub Shrub Wetlands.

Attachment H Supplemental Wetland Information consists of representative wetland delineation data forms and photographs from BSC and VHB.

Warwick, Massachusetts Forms

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WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-76-UPL

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-76-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR R Lat: 42.72443 Long: -72.39712 Datum: WGS 1984
 Soil Map Unit: Canton-Chatfield-Hollis complex, 8 to 15 percent slopes, rocky NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_4/3	100		N/A	N/A	N/A	LOAM	Refusal at 4

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>4</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G76

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Dominance Test Worksheet:				
# Dominants OBL, FACW, FAC:				1 (A)
# Dominants across all strata:				4 (B)
% Dominants OBL, FACW, FAC:				25.00% (A/B)
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Prevalence Index Worksheet:				
Total % Cover of:		Multiply By:		
OBL _____	x 1 =	_____		
FACW _____	x 2 =	_____		
FAC _____	x 3 =	_____		
FACU _____	x 4 =	_____		
UPL _____	x 5 =	_____		
Sum: _____	(A)	_____ (B)		
Prevalence Index		= B/A = _____		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Alnus incana</i>	20.5	X	FACW	
2. <i>Corylus americana</i>	20.5	X	FACU	
3. <i>Cornus amomum</i>	10.5		FACW	
4. <i>Pinus strobus</i>	10.5		FACU	
5. <i>Quercus alba</i>	3		FACU	
6. <i>Acer rubrum</i>	3		FAC	
7. <i>Spiraea alba</i>	0		FACW	
8. _____				
	68	= Total Cover		
Hydrophytic Vegetation Indicators:				
_____ Dominance Test is > 50%				
_____ Prevalence Index is <= 3.0				
_____ Problematic Hydrophytic Vegetation ¹ (explain)				
_____ Rapid Test for Hydrophytic Vegetation				
_____ Morphological Adaptations				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Herb Stratum (Plot size: 5 ft)				
1. <i>Rubus flagellaris</i>	38	X	FACU	
2. <i>Gaultheria procumbens</i>	38	X	FACU	
3. <i>Pteridium aquilinum</i>	20.5		FACU	
4. <i>Cornus canadensis</i>	10.5		FAC	
5. <i>Dendrolycopodium obscurum</i>	3		FACU	
6. <i>Potentilla indica</i>	3		FACU	
7. <i>Trientalis borealis</i>	3		FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	116	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
Definitions of Vegetation Strata:				
Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).				
Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.				
Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.				
Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.				
Woody vine - All woody vines, regardless of height.				
Hydrophytic Vegetation Present? _____ No				

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-76-WET

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-76-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.72444 Long: -72.39748 Datum: _____
 Soil Map Unit: Canton-Chatfield-Hollis complex, 8 to 15 percent slopes, rocky NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/1	100		N/A	N/A	N/A	MUCKY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>6</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-76-WET

Tree Stratum	(Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum	(Plot size: <u>30 ft</u>)				
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
		<u>0</u>	= Total Cover		
Shrub Stratum	(Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <i>Spiraea alba</i>		20.5	X	FACW	
2. <i>Alnus incana</i>		20.5	X	FACW	
3. <i>Acer rubrum</i>		10.5		FAC	
4. <i>Ilex verticillata</i>		10.5		FACW	
5. <i>Frangula alnus</i>		3		FAC	
6. _____					
7. _____					
8. _____					
		<u>65</u>	= Total Cover		
Herb Stratum	(Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Dulichium arundinaceum</i>		85.5	X	OBL	
2. <i>Thelypteris palustris</i>		63	X	FACW	
3. <i>Scirpus cyperinus</i>		10.5		OBL	
4. <i>Eupatorium perfoliatum</i>		3		FACW	
5. <i>Mimulus ringens</i>		3		OBL	
6. <i>Persicaria pensylvanica</i>		3		FACW	
7. <i>Rubus hispidus</i>		3		FACW	
8. <i>Hypericum fraseri</i>		3		OBL	
9. <i>Sparganium americanum</i>		0		OBL	
10. _____					
11. _____					
12. _____					
		<u>174</u>	= Total Cover		
Woody Vines	(Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
		<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species. Dominance Test is calculated for reference purposes only



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-78-UPL

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-78-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.72341 Long: -72.39368 Datum: WGS 1984
 Soil Map Unit: Chatfield-Hollis complex, 8 to 15 percent slopes, rocky NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_4/6	100		N/A	N/A	N/A	LOAM	
4-10	10YR_4/8	100		N/A	N/A	N/A	LOAM	Refusal at 12

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>10</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-78-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 40.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Betula lenta</i>	20.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Acer rubrum</i>	10.5	X	FAC	_____ Prevalence Index is <= 3.0
3. <i>Kalmia angustifolia</i>	10.5	X	FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Frangula alnus</i>	3		FAC	_____ Rapid Test for Hydrophytic Vegetation
5. <i>Pinus strobus</i>	3		FACU	_____ Morphological Adaptations
6. <i>Tsuga canadensis</i>	0		FACU	
7. _____				
8. _____				
	47	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Dendrolycopodium obscurum</i>	20.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	20.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	117	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-78-WET

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-78-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.72350 Long: -72.39403 Datum: WGS 984
 Soil Map Unit: Chatfield-Hollis complex, 8 to 15 percent slopes, rocky NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>2</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/1	100		N/A	N/A	N/A	LOAM	
8-12	10YR_3/2	80	10YR_2/1	20	D	M	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>12</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Frangula alnus</i>	10.5		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Ilex verticillata</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Morphological Adaptations
6. <i>Alnus incana</i>	0		FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <i>Pinus strobus</i>	0		FACU	
8. <i>Kalmia angustifolia</i>	0		FAC	
	57	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Thelypteris palustris</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago rugosa</i>	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Onoclea sensibilis</i>	3		FACW	
6. <i>Gaultheria procumbens</i>	3		FACU	
7. <i>Euthamia graminifolia</i>	3		FAC	
8. <i>Toxicodendron radicans</i>	0		FAC	
9. _____				
10. _____				
11. _____				
12. _____				
	106	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
				Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-80-UPL

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-80-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Undulating Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.72233 Long: -72.38945 Datum: WGS 1984
 Soil Map Unit: Chatfield-Hollis complex, 8 to 15 percent slopes, rocky NWI Class: Powerline ROW
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_3/3	100		N/A	N/A	N/A	LOAM	
4-10	10YR_3/4	90	7.5YR_5/8	10	C	M	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-80-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 20.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	38	X	FAC	_____ Dominance Test is > 50%
2. <i>Kalmia latifolia</i>	20.5	X	FACU	_____ Prevalence Index is <= 3.0
3. <i>Spiraea alba</i>	3		FACW	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Acer rubrum</i>	3		FAC	_____ Rapid Test for Hydrophytic Vegetation
5. <i>Quercus rubra</i>	3		FACU	_____ Morphological Adaptations
6. <i>Betula lenta</i>	3		FACU	
7. <i>Ilex verticillata</i>	3		FACW	
8. <i>Lyonia ligustrina</i>	3		FACW	
	76	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus flagellaris</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Dennstaedtia punctilobula</i>	38	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Gaultheria procumbens</i>	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	96	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-80-WET

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-80-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.72233 Long: -72.38969 Datum: WGS 1984
 Soil Map Unit: Chatfield-Hollis complex, 8 to 15 percent slopes, rocky NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: At least one primary or two secondary indicators present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_4/2	90	10YR_2/1	10	D	M	LOAMY_SAND	Refusal at 6

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input checked="" type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>6</u>	Hydric Soil Present? <u>Yes</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: G-80-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 7 (A)
2. _____				# Dominants across all strata: 8 (B)
3. _____				% Dominants OBL, FACW, FAC: 87.50% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Alnus incana</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	3	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Spiraea alba</i>	3	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Acer rubrum</i>	0		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	9	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	10.5	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Onoclea sensibilis</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Persicaria pensylvanica</i>	10.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago gigantea</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Bidens aristosa</i>	3		FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	48	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. <i>Vitis riparia</i>	85.5		FAC	
2. _____				
3. _____				
4. _____				
5. _____				
	85	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-81-WET

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-81-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.72111 Long: -72.38507 Datum: WGS 1984
 Soil Map Unit: Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony NWI Class: PFO
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_3/3	100		N/A	N/A	N/A	LOAM	
8-18	10YR_3/6	100		N/A	N/A	N/A	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-81-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	38	X	FAC	_____ Dominance Test is > 50%
2. Gaylussacia baccata	20.5	X	FACU	_____ Prevalence Index is <= 3.0
3. Acer rubrum	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. Pinus strobus	3		FACU	_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				
7. _____				
8. _____				
	64	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus flagellaris	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Dendrolycopodium obscurum	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Lycopodium clavatum	10.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Pteridium aquilinum	10.5	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Osmunda spectabilis	3		OBL	Woody vine - All woody vines, regardless of height.
6. Osmundastrum cinnamomeum	3		FACW	
7. Maianthemum canadense	3		FACU	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	61	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WA-W7

G-81-WET

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-81-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range:
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 1-2%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
X High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) X Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
X Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): Surface
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-12 10YR_2/1 100 N/A N/A N/A MUCKY_LOAM Refusal at 12
1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histc Epipedon (A2)
Black Histc (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Rock
Depth (inches): 12
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-81-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. Frangula alnus	85.5	X	FAC	OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
85 = Total Cover				Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Frangula alnus	85.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
85 = Total Cover				Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Osmunda spectabilis	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
10 = Total Cover				Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-82-UPL

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-82-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.72041 Long: -72.38288 Datum: WGS 1984
 Soil Map Unit: Canton-Chatfield-Hollis complex, 8 to 15 percent slopes, rocky NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_3/4	100		N/A	N/A	N/A	LOAM	
3-12	10YR_5/4	80	10YR_4/6	20	C	M	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>12</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicator present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-82-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	10.5	X	FACW	_____ Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	10.5	X	FACW	_____ Prevalence Index is <= 3.0
3. <i>Betula lenta</i>	3		FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Tsuga canadensis</i>	0		FACU	_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				
7. _____				
8. _____				
	24	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus flagellaris</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Elymus virginicus</i>	38	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dennstaedtia punctilobula</i>	38	X	UPL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Dendrolycopodium obscurum</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. <i>Lycopodium clavatum</i>	3		FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	158	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-82-WET

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-82-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.72048 Long: -72.38314 Datum: WGS 1984
 Soil Map Unit: Canton-Chatfield-Hollis complex, 8 to 15 percent slopes, rocky NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drouht conditons
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? <u>X</u> Depth (inches): <u>2</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR_4/1	90	10YR_3/6	10	C	M,PL	LOAM	
10-18	10YR_5/1	90	10YR_3/6	10	C	M,PL	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>Yes</u>
Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-82-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____	_____	_____	_____	# Dominants across all strata: <u>4</u> (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: <u>2</u> x 1 = <u>2</u>
2. _____	_____	_____	_____	FACW <u>5</u> x 2 = <u>10</u>
3. _____	_____	_____	_____	FAC <u>1</u> x 3 = <u>3</u>
4. _____	_____	_____	_____	FACU <u>1</u> x 4 = <u>4</u>
5. _____	_____	_____	_____	UPL <u>0</u> x 5 = <u>0</u>
6. _____	_____	_____	_____	Sum: <u>9</u> (A) <u>19</u> (B)
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	Prevalence Index = B/A = <u>2.80</u>
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Betula lenta</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____	_____	_____	_____	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>34</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Elymus virginicus</i>	63	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Toxicodendron radicans</i>	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Thelypteris palustris</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Scirpus cyperinus</i>	3		OBL	
6. <i>Juncus effusus</i>	3		OBL	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>138</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
				Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-83-UPL

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-83-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.71964 Long: -72.37985 Datum: WGS 1984
 Soil Map Unit: Chatfield-Hollis complex, 3 to 8 percent slopes, rocky NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_6/1	100		N/A	N/A	N/A	LOAM	
6-12	10YR_5/8	100		N/A	N/A	N/A	LOAM	Refusal at 12

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>12</u>	Hydric Soil Present? <u>Yes</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: G-83-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	38	X	FACU	_____ Dominance Test is > 50%
2. <i>Gaylussacia baccata</i>	20.5	X	FACU	_____ Prevalence Index is <= 3.0
3. <i>Betula lenta</i>	10.5		FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	69	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus flagellaris</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	10.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dendrolycopodium dendroideum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	62	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G=83-WET

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-83-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.71969 Long: -72.38016 Datum: WGS 1984
 Soil Map Unit: Chatfield-Hollis complex, 3 to 8 percent slopes, rocky NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/1	100		N/A	N/A	N/A	LOAM	
6-15	10YR_4/1	95	10YR_3/4	5	C	M	LOAM	
15-18	N_5/	95	10YR_2/1	5	D	M	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:		<u>Yes</u>	
Depth (inches):			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: G-83-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Kalmia latifolia</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Kalmia angustifolia</i>	3		FAC	<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Betula lenta</i>	3		FACU	<input type="checkbox"/> Morphological Adaptations
6. <i>Acer rubrum</i>	3		FAC	
7. <i>Ilex verticillata</i>	3		FACW	
8. _____				
	46	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Poa paludigena</i>	85.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Glyceria canadensis</i>	20.5		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus hispidus</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Gaultheria procumbens</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Osmunda cinnamomea</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	122	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present; parameter is met. Dominance test calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-84-UPL

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-84-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Undulating Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.71909 Long: -72.37809 Datum: WGS 1984
 Soil Map Unit: Scituate fine sandy loam, 3 to 8 percent slopes, very stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_4/3	100		N/A	N/A	N/A	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>4</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-84-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 25.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%
1. <i>Kalmia angustifolia</i>	63	X	FAC	_____ Prevalence Index is <= 3.0
2. <i>Kalmia latifolia</i>	20.5	X	FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Acer rubrum</i>	10.5		FAC	_____ Rapid Test for Hydrophytic Vegetation
4. <i>Betula lenta</i>	3		FACU	_____ Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	97	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus flagellaris</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Gaultheria procumbens</i>	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Dendrolycopodium obscurum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	44	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-84-WET

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 9/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-84-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.71911 Long: -72.37839 Datum: WGS 1984
 Soil Map Unit: Scituate fine sandy loam, 3 to 8 percent slopes, very stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR_2/1	100		N/A	N/A	N/A	MUCK	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input checked="" type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>Yes</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: G_84-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	34	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Calamagrostis canadensis</i>	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Scirpus cyperinus</i>	38	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmundastrum cinnamomeum</i>	38	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Thelypteris palustris</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	117	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species. Dominance test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A42 Upland

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A42 Upland
 Investigator(s): E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.71711 Long: -72.37095 Datum: _____
 Soil Map Unit: Scituate fine sandy loam NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	SANDY_LOAM	Many fine roots
3-10	10YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	Gravel refusal at 10 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Gravel</u>		Hydric Soil Present?	<u>No</u>
Depth (inches): <u>10</u>			
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: A42 Upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 0.0 x 2 = 0.0
4. _____				FAC 38.0 x 3 = 114.0
5. _____				FACU 110.5 x 4 = 442.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 148.5 (A) 556.0 (B)
8. _____				Prevalence Index = B/A = 3.74
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	Dominance Test is > 50%
2. _____				Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	10	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Kalmia angustifolia</i>	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus flagellaris</i>	20.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Pinus strobus</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. <i>Dendrolycopodium obscurum</i>	3		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	138	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A42 Wetland

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A42 Wetland
 Investigator(s): E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.71711 Long: -72.37105 Datum: _____
 Soil Map Unit: Scituite fine sandy loam NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>11</u>		
Saturation Present?	Depth (inches): <u>8</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-3	10YR_2/1	100		N/A	N/A	FINE_SANDY_LOAM	
3-6	10YR_4/3	100		N/A	N/A	FINE_SANDY_LOAM	
6-20	2.5Y_4/2	100		N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>Yes</u>	
Depth (inches): _____			
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: A42 Wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 58.5 x 1 = 58.5
3. _____				FACW 44.0 x 2 = 88.0
4. _____				FAC 0.0 x 3 = 0.0
5. _____				FACU 6.0 x 4 = 24.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 108.5 (A) 170.5 (B)
8. _____				Prevalence Index = B/A = 1.57
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	3		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Kalmia latifolia</i>	0		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	23	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Scirpus cyperinus</i>	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Carex crinita</i>	20.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus hispidus</i>	20.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Gaultheria procumbens</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Pinus strobus</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	85	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A41 up plot

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/6/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A41 up plot
 Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.71681 Long: -72.36995 Datum: _____
 Soil Map Unit: Pilsbury NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_4/3	100		N/A	N/A	N/A	LOAMY_SAND	
1-2	10YR_3/1	100		N/A	N/A	N/A	SANDY_LOAM	
2-10	10YR_3/3	100		N/A	N/A	N/A	SANDY_LOAM	
10-11	10YR_4/3	100	5YR_4/6	2	C	M	SANDY_LOAM	
11-20	10YR_6/1	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: A41 up plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 3.0 x 1 = 3.0
2. _____				FACW 3.0 x 2 = 6.0
3. _____				FAC 13.5 x 3 = 40.5
4. _____				FACU 76.5 x 4 = 306.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 96.0 (A) 355.5 (B)
7. _____				Prevalence Index = B/A = 3.70
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	Dominance Test is > 50%
2. <i>Kalmia angustifolia</i>	10.5	X	FAC	Prevalence Index is <= 3.0
3. <i>Lyonia ligustrina</i>	3		FACW	Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Betula lenta</i>	3		FACU	Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	27	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Kalmia angustifolia</i>	3		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmunda spectabilis</i>	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	69	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A41 wet

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/6/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A41 wet
 Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.71679 Long: -72.36986 Datum: _____
 Soil Map Unit: Pilsbury NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_3/2	100		N/A	N/A	N/A	SANDY_LOAM	Some fine roots
4-8	10YR_3/1	100	5YR_3/4	2	C	PL	SANDY_LOAM	Some fine roots
8-16	10YR_5/1	100	10YR_5/6	2	C	M	LOAMY_SAND	
16-20	10YR_5/1	100	10YR_5/6	5	C	M	LOAMY_SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: A41 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Frangula alnus	3	X	FAC	Total % Cover of:
2. _____				OBL 10.5 x 1 = 10.5
3. _____				FACW 29.5 x 2 = 59.0
4. _____				FAC 6.0 x 3 = 18.0
5. _____				FACU 0.0 x 4 = 0.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 46.0 (A) 87.5 (B)
8. _____				Prevalence Index = B/A = 1.90
	3	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Lyonia ligustrina	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Spiraea alba	3		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Spiraea tomentosa	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	26	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Vaccinium macrocarpon	10.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Acer rubrum	3		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Carex intumescens	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	16	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A40 upland

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/6/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A40 upland
 Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.71592 Long: -72.36701 Datum: _____
 Soil Map Unit: Canton Chatfield Hollis NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_3/1	100		N/A	N/A	N/A	SANDY_LOAM	
1-5	10YR_5/3	100	5YR_4/6	2	C	M	SANDY_LOAM	
5-12	10YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	
12-17	10YR_4/3	100	7.5YR_4/6	2	C	M	SANDY_LOAM	
17-20	10YR_5/2	100	7.5YR_4/6	2	C	M	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: A40 upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. Acer_SP	10.5	X	NULL	# Dominants OBL, FACW, FAC: 0 (A)
2. Pinus strobus	3		FACU	# Dominants across all strata: 7 (B)
3. Fagus grandifolia	3		FACU	% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	16	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. Betula lenta	38	X	FACU	OBL 0.0 x 1 = 0.0
2. _____				FACW 0.0 x 2 = 0.0
3. _____				FAC 0.0 x 3 = 0.0
4. _____				FACU 56.0 x 4 = 224.0
5. _____				UPL 3.0 x 5 = 15.0
6. _____				Sum: 59.0 (A) 239.0 (B)
7. _____				Prevalence Index = B/A = 4.05
8. _____				
	38	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%
1. Betula lenta	3	X	FACU	_____ Prevalence Index is <= 3.0
2. Quercus rubra	3	X	FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				_____ Rapid Test for Hydrophytic Vegetation
4. _____				_____ Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	6	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Quercus rubra	3	X	FACU	
2. Dennstaedtia punctilobula	3	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Pinus strobus	3	X	FACU	
4. Maianthemum racemosum	0		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
5. _____				
6. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				Woody vine - All woody vines, regardless of height.
	9	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A40 wet

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/6/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A40 wet
 Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.71587 Long: -72.36686 Datum:
 Soil Map Unit: Canton chatfield Hollis NWI Class: PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	Yes		
Wetland Hydrology Present?	Yes		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): N/A	Yes	
Water Table Present?	Depth (inches): N/A		
Saturation Present?	Depth (inches): N/A		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix	Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	
0-3	10YR_3/1	100	N/A	N/A	N/A	N/A	SANDY_LOAM Some fine roots
3-9	2.5Y_5/2	100	7.5YR_5/6	2	C	M	SANDY_LOAM Rock refusal at 9 inches
			10YR_6/1	2	D	M	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:		Yes	
Depth (inches):			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: A40 wet

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <u>Acer rubrum</u>	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>80.00%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	10	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>34.0</u> x 2 = <u>68.0</u> FAC <u>21.0</u> x 3 = <u>63.0</u> FACU <u>13.5</u> x 4 = <u>54.0</u> UPL <u>3.0</u> x 5 = <u>15.0</u> Sum: <u>71.5</u> (A) <u>200.0</u> (B) Prevalence Index = B/A = <u>2.80</u>	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. <u>Frangula alnus</u>	10.5	X	FAC		
2. <u>Betula lenta</u>	10.5	X	FACU		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	21	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <u>Lyonia ligustrina</u>	20.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	20	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <u>Onoclea sensibilis</u>	10.5	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <u>Dichantheium clandestinum</u>	3		FACW		
3. <u>Spiraea betulifolia</u>	3		FACU		
4. <u>Dennstaedtia punctilobula</u>	3		UPL		
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	19	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A38 upland

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/6/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A38 upland
 Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Other Sloping Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.71507 Long: -72.36241 Datum: _____
 Soil Map Unit: Canton fine sandy loam NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present?	<u>No</u>	
Wetland Hydrology Present?	<u>No</u>	
Remarks: _____		

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
_____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C5) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8) _____	_____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: _____	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/2	100		N/A	N/A	N/A	LOAM	Many fine roots
3-7	10YR_5/6	100		N/A	N/A	N/A	SANDY_LOAM	
7-8	5YR_4/4	100		N/A	N/A	N/A		
8-14	10YR_5/6	100		N/A	N/A	N/A	SANDY_LOAM	
14-20	10YR_6/6	100	7.5YR_5/8	5	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: _____ Histosol (A1) _____ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) _____ Histic Epipedon (A2) _____ Thin Dark Surface (S9) (LRR R, MLRA 149B) _____ Black Histic (A3) _____ Loamy Mucky Mineral (F1) (LRR K, L) _____ Hydrogen Sulfide (A4) _____ Loamy Gleyed Matrix (F2) _____ Stratified Layers (A5) _____ Depleted Matrix (F3) _____ Depleted Below Dark Surface (A11) _____ Redox Dark Surface (F6) _____ Thick Dark Surface (A12) _____ Depleted Dark Surface (F7) _____ Sandy Mucky Mineral (S1) _____ Redox Depressions (F8) _____ Sandy Gleyed Matrix (S4) _____ Sandy Redox (S5) _____ Stripped Matrix (S6) _____ Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : _____ 2 cm Muck (A10) (LRR K, L, MLRA 149B) _____ Coast Prairie Redox (A16) (LRR K, L, R) _____ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) _____ Dark Surface (S7) (LRR K, L, M) _____ Polyvalue Below Surface (S8) (LRR K, L) _____ Thin Dark Surface (S9) (LRR K, L) _____ Iron-Manganese Masses (F12) (LRR K, L, R) _____ Piedmont Floodplain Soils (F19) (MLRA 149B) _____ Mesic Spodic (TA6) (MLRA 144A, 145, 149B) _____ Red Parent Material (F21) _____ Very Shallow Dark Surface (TF12) _____ Other (Explain in Remarks)
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: _____	

VEGETATION - Use scientific names of plants.



Sampling Point: A38 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 20.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Quercus rubra	3	X	FACU	Total % Cover of:
2. Betula lenta	3	X	FACU	OBL 0.0 x 1 = 0.0
3. Acer rubrum	3	X	FAC	FACW 3.0 x 2 = 6.0
4. _____				FAC 3.0 x 3 = 9.0
5. _____				FACU 32.5 x 4 = 130.0
6. _____				UPL 63.0 x 5 = 315.0
7. _____				Sum: 101.5 (A) 460.0 (B)
8. _____				Prevalence Index = B/A = 4.53
	9	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Kalmia latifolia	20.5	X	FACU	Dominance Test is > 50%
2. Vaccinium corymbosum	3		FACW	Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	23	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Dennstaedtia punctilobula	63	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Quercus rubra	3		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Parthenocissus quinquefolia	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	69	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A38 wet

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/6/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A38 wet
 Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.71502 Long: -72.36224 Datum: _____
 Soil Map Unit: Canton fine sandy loam NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	<u>X</u>	Depth (inches):	<u>1</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Saturation Present?	<u> </u>	Depth (inches):	<u>N/A</u>
		Wetland Hydrology Present?	<u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/2	100		N/A	N/A	N/A	SANDY_LOAM	
8-13	10YR_4/1	100	5YR_4/6	2	C	M	LOAMY_SAND	Rock refusal at 13 inches
			7.5YR_4/4	2	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type:	<u> </u>	Hydric Soil Present?	<u>Yes</u>
Depth (inches):	<u> </u>		
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: A38 wet

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. <i>Tsuga canadensis</i>	10.5	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 2 (A) # Dominants across all strata: 3 (B) % Dominants OBL, FACW, FAC: 66.67% (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	10	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL 44.0 x 1 = 44.0 FACW 16.5 x 2 = 33.0 FAC 3.0 x 3 = 9.0 FACU 16.5 x 4 = 66.0 UPL 0.0 x 5 = 0.0 Sum: 80.0 (A) 152.0 (B) Prevalence Index = B/A = 1.90	
Sapling Stratum (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Shrub Stratum (Plot size: 15 ft)					
1. <i>Spiraea latifolia</i>	10.5	X	FACW		
2. <i>Betula lenta</i>	3		FACU		
3. <i>Acer rubrum</i>	3		FAC		
4. <i>Vaccinium corymbosum</i>	3		FACW		
5. _____					
6. _____					
7. _____					
8. _____					
	19	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
Herb Stratum (Plot size: 5 ft)					
1. <i>Osmunda spectabilis</i>	38	X	OBL		
2. <i>Onoclea sensibilis</i>	3		FACW		
3. <i>Carex lurida</i>	3		OBL		
4. <i>Scirpus cyperinus</i>	3		OBL		
5. <i>Kalmia latifolia</i>	3		FACU		
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	50	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover		Hydrophytic Vegetation Present? Yes	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A-37-UPL

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A-37-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 12-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.71494 Long: -72.36163 Datum: WGS 1984
 Soil Map Unit: Canton fine sandy loam, 8 to 15 percent slopes, very stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR_4/6	100		N/A	N/A	N/A	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

VEGETATION - Use scientific names of plants.



Sampling Point: A-37-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)					Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	Acer saccharum	20.5	X	FACU	
2.	Ilex verticillata	20.5	X	FACW	
3.	Spiraea alba	3		FACW	
4.					
5.					
6.					
7.					
8.					
		<u>44</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	Dennstaedtia punctilobula	63	X	UPL	
2.	Rubus flagellaris	20.5	X	FACU	
3.	Dendrolycopodium obscurum	3		FACU	
4.	Lycopodium clavatum	3		FAC	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		<u>89</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)					Hydrophytic Vegetation Present? <u>No</u>
1.					
2.					
3.					
4.					
5.					
		<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A-37-WET

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A-37-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.71484 Long: -72.36148 Datum: WGS 1984
 Soil Map Unit: Canton fine sandy loam, 8 to 15 percent slopes, very stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-8	10YR_2/1	80	10YR_3/2	20	C	M	LOAM
8-18	10YR_2/1	80	10YR_4/2	20	C	M	GRAVELLY_LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed):				Hydric Soil Present? <u>Yes</u>			
Type: _____							
Depth (inches): _____							
Remarks:							

VEGETATION - Use scientific names of plants.



Sampling Point: A-37-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <u>Spiraea alba</u>	<u>10.5</u>	<u>X</u>	<u>FACW</u>	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <u>Acer rubrum</u>	<u>3</u>	<u>X</u>	<u>FAC</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>13</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Osmundastrum cinnamomeum</u>	<u>20.5</u>	<u>X</u>	<u>FACW</u>	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <u>Onoclea sensibilis</u>	<u>20.5</u>	<u>X</u>	<u>FACW</u>	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <u>Scirpus cyperinus</u>	<u>10.5</u>		<u>OBL</u>	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <u>Solidago gigantea</u>	<u>3</u>		<u>FACW</u>	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>54</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A36 upland

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/6/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A36 upland
 Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.71481 Long: -72.36014 Datum: _____
 Soil Map Unit: Windsor loamy sand NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_3/3	100		N/A	N/A	N/A	LOAMY_SAND	Many fine roots
2-6	10YR_4/4	100		N/A	N/A	N/A	LOAMY_SAND	Some fine roots
6-12	10YR_4/4	100		N/A	N/A	N/A	LOAMY_SAND	
12-18	10YR_5/4	100		N/A	N/A	N/A	LOAMY_SAND	
18-20	2.5Y_6/6	100		N/A	N/A	N/A	LOAMY_SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?	<u>No</u>
Type: _____		
Depth (inches): _____		
Remarks: _____		

VEGETATION - Use scientific names of plants.



Sampling Point: A36 upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <i>Tsuga canadensis</i>	3	X	FACU	# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>3</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>48.5</u> x 2 = <u>97.0</u>
3. _____				FAC <u>31.0</u> x 3 = <u>93.0</u>
4. _____				FACU <u>44.0</u> x 4 = <u>176.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>123.5</u> (A)
7. _____				<u>366.0</u> (B)
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.96</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <i>Spiraea latifolia</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>10</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Onoclea sensibilis</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Rubus flagellaris</i>	38	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Toxicodendron radicans</i>	20.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Solidago rugosa</i>	10.5		FAC	Woody vine - All woody vines, regardless of height.
5. <i>Pinus strobus</i>	3		FACU	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>110</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A36 wetland

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/6/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A36 wetland
 Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.71474 Long: -72.36011 Datum: _____
 Soil Map Unit: Windsor loamy sand NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	<u>Yes</u>
Surface Water Present?	<u>X</u> Depth (inches): <u>2</u>		
Water Table Present?	<u>X</u> Depth (inches): <u>10</u>		
Saturation Present?	<u>X</u> Depth (inches): <u>Surface</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: _____

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	10YR_2/1	100		N/A	N/A	N/A	SANDY_LOAM	
14-20	10YR_3/2	100	10YR_5/2	5	D	M	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>Yes</u>
Type:	_____		
Depth (inches):	_____		
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: A36 wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 6.0 x 1 = 6.0
3. _____				FACW 91.5 x 2 = 183.0
4. _____				FAC 3.0 x 3 = 9.0
5. _____				FACU 3.0 x 4 = 12.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 103.5 (A) 210.0 (B)
8. _____				Prevalence Index = B/A = 2.03
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Betula lenta</i>	3	X	FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	6	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	85.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Scirpus atrovirens</i>	3		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Impatiens capensis</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Persicaria sagittata</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Parathelypteris noveboracensis</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	97	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A44 up

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A44 up
 Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.70799 Long: -72.34111 Datum: GCS WGS 1984
 Soil Map Unit: Walpole sandy loam NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_3/3	100		N/A	N/A	N/A	SANDY_LOAM	
3-5	10YR_4/6	100		N/A	N/A	N/A	SANDY_LOAM	Rock refusal at 5 inches
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators:						Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)				
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)				
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)				
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)				
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)				
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)				
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)				
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)				
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed): Type: _____ Depth (inches): _____						Hydric Soil Present? <u>No</u>		
Remarks:								

VEGETATION - Use scientific names of plants.



Sampling Point: A44 up

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____	_____	_____	_____	# Dominants across all strata: <u>4</u> (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
			<u>0</u> = Total Cover	
Sapling Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <u>Quercus rubra</u>	<u>3</u>	<u>X</u>	<u>FACU</u>	Total % Cover of: OBL <u>0</u> x 1 = <u>0</u>
2. <u>Fagus grandifolia</u>	<u>3</u>	<u>X</u>	<u>FACU</u>	FACW <u>1</u> x 2 = <u>2</u>
3. _____	_____	_____	_____	FAC <u>1</u> x 3 = <u>3</u>
4. _____	_____	_____	_____	FACU <u>6</u> x 4 = <u>24</u>
5. _____	_____	_____	_____	UPL <u>1</u> x 5 = <u>5</u>
6. _____	_____	_____	_____	Sum: <u>9</u> (A) <u>34</u> (B)
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
			<u>6</u> = Total Cover	Prevalence Index = B/A = <u>3.19</u>
Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	_____ Dominance Test is > 50%
2. _____	_____	_____	_____	_____ Prevalence Index is <= 3.0
3. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____	_____	_____	_____	_____ Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	_____ Morphological Adaptations
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
			<u>0</u> = Total Cover	Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Dennstaedtia punctilobula</u>	<u>20.5</u>	<u>X</u>	<u>UPL</u>	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <u>Rubus hispidus</u>	<u>20.5</u>	<u>X</u>	<u>FACW</u>	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <u>Pteridium aquilinum</u>	<u>10.5</u>	_____	<u>FACU</u>	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <u>Vaccinium angustifolium</u>	<u>3</u>	_____	<u>FACU</u>	Woody vine - All woody vines, regardless of height.
5. <u>Acer rubrum</u>	<u>3</u>	_____	<u>FAC</u>	
6. <u>Quercus rubra</u>	<u>3</u>	_____	<u>FACU</u>	
7. <u>Dendrolycopodium obscurum</u>	<u>3</u>	_____	<u>FACU</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
			<u>63</u> = Total Cover	
Woody Vines (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>No</u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			<u>0</u> = Total Cover	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A44 wet

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/18/2020
Applicant/Owner: National Grid State: MA Sampling Point: A44 wet
Investigator(s): K. Kinsella and E. Martin Section, Township, Range: Warwick
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.70794 Long: -72.34006 Datum: GCS WGS 1984
Soil Map Unit: Walpole sandy loam NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 5
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_3/3 100 N/A N/A N/A N/A SANDY_LOAM Many fine roots
2-12 10YR_3/1 95 5YR_3/4 5 C M SANDY_LOAM Rock refusal at 12 inches
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: A44 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <i>Alnus incana</i>	38	X	FACW	Total % Cover of: <u>20.5</u> x 1 = <u>20.5</u>
2. <i>Acer saccharum</i>	3		FACU	FACW <u>51.5</u> x 2 = <u>103.0</u>
3. <i>Acer rubrum</i>	3		FAC	FAC <u>6.0</u> x 3 = <u>18.0</u>
4. _____				FACU <u>6.0</u> x 4 = <u>24.0</u>
5. _____				UPL <u>38.0</u> x 5 = <u>190.0</u>
6. _____				Sum: <u>122.0</u> (A) <u>355.5</u> (B)
7. _____				
8. _____				
	<u>44</u>	= Total Cover		Prevalence Index = B/A = <u>2.91</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Salix_SP</i>	3	X	NULL	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>3</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Dennstaedtia punctilobula</i>	38	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Osmunda spectabilis</i>	20.5	X	OBL	
3. <i>Onoclea sensibilis</i>	10.5		FACW	
4. <i>Acer rubrum</i>	3		FAC	
5. <i>Quercus rubra</i>	3		FACU	
6. <i>Osmundastrum cinnamomeum</i>	3		FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
12. _____				
	<u>78</u>	= Total Cover		Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A45 upland

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A45 upland
 Investigator(s): K. Kinsella and E Martin Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.70779 Long: -72.33944 Datum:
 Soil Map Unit: NWI Class:
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	No	Is This Sample Area Within a Wetland?	No
Hydric Soil Present?	No		
Wetland Hydrology Present?	No		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): N/A	No	
Water Table Present?	Depth (inches): N/A		
Saturation Present?	Depth (inches): N/A		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_4/3	100		N/A	N/A	N/A	LOAMY_SAND	
2-8	10YR_5/6	100		N/A	N/A	N/A	LOAMY_SAND	Rock refusal at 8 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:		No	
Depth (inches):			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: A45 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. <i>Fagus grandifolia</i>	3	X	FACU	# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
3 = Total Cover				
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <i>Acer saccharum</i>	10.5	X	FACU	Total % Cover of: OBL 0 x 1 = 0
2. <i>Quercus rubra</i>	10.5	X	FACU	FACW 1 x 2 = 2
3. <i>Betula lenta</i>	3		FACU	FAC 0 x 3 = 0
4. _____				FACU 7 x 4 = 28
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 8 (A) 30 (B)
7. _____				Prevalence Index = B/A = 3.95
8. _____				
24 = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Quercus rubra</i>	3	X	FACU	Dominance Test is > 50%
2. _____				Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
3 = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	85.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Dichanthelium clandestinum</i>	3		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Vaccinium angustifolium</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
91 = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A45 wet

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/18/2020
Applicant/Owner: National Grid State: MA Sampling Point: A45 wet
Investigator(s): K Kinsella and E. Martin Section, Township, Range: Warwick
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
Subregion (LRR or MLRA): LRR Lat: 42.70774 Long: -72.33943 Datum:
Soil Map Unit: NWI Class: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show data for depths 0-2, 2-4, and 4-14 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: A45 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet:	
2. _____				# Dominants OBL, FACW, FAC: 5 (A)	
3. _____				# Dominants across all strata: 5 (B)	
4. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)	
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:	
1. <i>Alnus incana</i>	20.5	X	FACW	OBL 1 x 1 = 1	Multiply By: 1
2. _____				FACW 4 x 2 = 8	
3. _____				FAC 0 x 3 = 0	
4. _____				FACU 0 x 4 = 0	
5. _____				UPL 0 x 5 = 0	
6. _____				Sum: 5 (A)	9 (B)
7. _____				Prevalence Index = B/A = 2.94	
8. _____					
	20	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%	
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0	
2. <i>Spiraea alba</i>	10.5	X	FACW	Problematic Hydrophytic Vegetation ¹ (explain)	
3. _____				Rapid Test for Hydrophytic Vegetation	
4. _____				Morphological Adaptations	
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
6. _____					
7. _____					
8. _____					
	21	= Total Cover		Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
1. <i>Osmunda spectabilis</i>	38	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
2. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
3. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
4. _____				Woody vine - All woody vines, regardless of height.	
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	48	= Total Cover		Hydrophytic Vegetation Present? Yes	
Woody Vines (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover			

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A46 Upland

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A46 Upland
 Investigator(s): Kk and EM Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.70625 Long: -72.33588 Datum:
 Soil Map Unit: Chatfield-Hollis complex NWI Class:
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology - significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	No	Is This Sample Area Within a Wetland?	No
Hydric Soil Present?	No		
Wetland Hydrology Present?	No		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:
 Surface Water Present? _____ Depth (inches): N/A
 Water Table Present? _____ Depth (inches): N/A
 Saturation Present? _____ Depth (inches): N/A
 Wetland Hydrology Present? _____
 Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
 Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_3/3	100		N/A	N/A	N/A	SANDY_LOAM	Many fine roots
2-4	10YR_2/2	100		N/A	N/A	N/A	SANDY_LOAM	
4-20	10YR_3/4	100		N/A	N/A	N/A	SANDY_LOAM	2% gravel

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
		<input type="checkbox"/> Other (Explain in Remarks)	

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____
 Hydric Soil Present? _____
 Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: A46 Upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. Acer rubrum	20.5	X	FAC	# Dominants OBL, FACW, FAC: <u>6</u> (A)
2. Betula lenta	20.5	X	FACU	# Dominants across all strata: <u>14</u> (B)
3. Quercus rubra	20.5	X	FACU	% Dominants OBL, FACW, FAC: <u>42.86%</u> (A/B)
4. Tsuga canadensis	10.5		FACU	
5. _____				
6. _____				
7. _____				
8. _____				
	<u>72</u>	= Total Cover		Prevalence Index Worksheet:
				Total % Cover of:
				Multiply By:
				OBL <u>0.0</u> x 1 = <u>0.0</u>
				FACW <u>6.0</u> x 2 = <u>12.0</u>
				FAC <u>32.5</u> x 3 = <u>97.5</u>
				FACU <u>80.0</u> x 4 = <u>320.0</u>
				UPL <u>0.0</u> x 5 = <u>0.0</u>
				Sum: <u>118.5</u> (A) <u>429.5</u> (B)
				Prevalence Index = B/A = <u>3.62</u>
Sapling Stratum (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Indicators:
1. Betula lenta	10.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. Tsuga canadensis	3		FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Acer rubrum	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>16</u>	= Total Cover		Definitions of Vegetation Strata:
				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
				Woody vine - All woody vines, regardless of height.
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? <u>No</u>
1. Acer rubrum	3	X	FAC	
2. Quercus rubra	3	X	FACU	
3. Betula lenta	3	X	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>9</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. Eupatorium perfoliatum	3	X	FACW	
2. Solidago rugosa	3	X	FAC	
3. Maianthemum canadense	3	X	FACU	
4. Rubus hispidus	3	X	FACW	
5. Pinus strobus	3	X	FACU	
6. Frangula alnus	3	X	FAC	
7. Dendrolycopodium obscurum	3	X	FACU	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>21</u>	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A46 wet plot

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A46 wet plot
 Investigator(s): KK and EM Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.70630 Long: -72.33584 Datum:
 Soil Map Unit: Chat field-hollis complex NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	Yes		
Wetland Hydrology Present?	Yes		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			
Surface Water Present?	<input type="checkbox"/>	Depth (inches):	N/A
Water Table Present?	<input type="checkbox"/>	Depth (inches):	N/A
Saturation Present?	<input checked="" type="checkbox"/>	Depth (inches):	5
Wetland Hydrology Present?			Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_3/3	100		N/A	N/A	N/A	SANDY_LOAM	Many fine roots
2-4	10YR_2/1	100		N/A	N/A	N/A	SANDY_LOAM	Some fine roots
5-17	10YR_4/1	100	7.5YR_4/4	2	C	M	SANDY_LOAM	Rock refusal at 17

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	Yes
Type:			
Depth (inches):			

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: A46 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet:	
2. _____				# Dominants OBL, FACW, FAC: 4 (A)	
3. _____				# Dominants across all strata: 5 (B)	
4. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)	
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:	
1. <i>Alnus incana</i>	20.5	X	FACW	OBL 13.5	x 1 = 13.5
2. <i>Lyonia ligustrina</i>	3		FACW	FACW 50.5	x 2 = 101.0
3. _____				FAC 9.0	x 3 = 27.0
4. _____				FACU 10.5	x 4 = 42.0
5. _____				UPL 0.0	x 5 = 0.0
6. _____				Sum: 83.5 (A)	183.5 (B)
7. _____				Prevalence Index = B/A = 2.20	
8. _____					
	23	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%	
1. <i>Betula lenta</i>	10.5	X	FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0	
2. <i>Acer rubrum</i>	3		FAC	Problematic Hydrophytic Vegetation ¹ (explain)	
3. <i>Alnus incana</i>	3		FACW	Rapid Test for Hydrophytic Vegetation	
4. <i>Frangula alnus</i>	3		FAC	Morphological Adaptations	
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
6. _____					
7. _____					
8. _____					
	19	= Total Cover		Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
1. <i>Eupatorium perfoliatum</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
2. <i>Bidens frondosa</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
3. <i>Carex crinita</i>	10.5	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
4. <i>Eupatorium X_SP</i>	3		NULL	Woody vine - All woody vines, regardless of height.	
5. <i>Frangula alnus</i>	3		FAC		
6. <i>Galium asprellum</i>	3		OBL		
7. <i>Rubus hispidus</i>	3		FACW		
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	43	= Total Cover		Hydrophytic Vegetation Present? Yes	
Woody Vines (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover			

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

A49 upland plot

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: A49 upland plot
 Investigator(s): KK and EM Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.70541 Long: -72.33317 Datum: _____
 Soil Map Unit: Chatfield-Hollis complex NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes _____ Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation Yes _____, Soil No _____, or Hydrology No _____ significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No _____, Soil No _____, or Hydrology No _____ naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: _____	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>-</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: _____	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_2/2	100		N/A	N/A	N/A	SANDY_LOAM	Many fine roots
1-9	10YR_3/4	100		N/A	N/A	N/A	SANDY_LOAM	
9-17	10YR_3/6	100		N/A	N/A	N/A	SANDY_LOAM	
17-20	10YR_5/4	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: _____	

VEGETATION - Use scientific names of plants.



Sampling Point: A49 upland plot

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <u>Acer rubrum</u>	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>5</u> (A) # Dominants across all strata: <u>11</u> (B) % Dominants OBL, FACW, FAC: <u>45.45%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	10	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)				
1. <u>Betula lenta</u>	10.5	X	FACU	Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>6.0</u> x 2 = <u>12.0</u> FAC <u>16.5</u> x 3 = <u>49.5</u> FACU <u>33.0</u> x 4 = <u>132.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>55.5</u> (A) <u>193.5</u> (B) Prevalence Index = B/A = <u>3.49</u>
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	10	= Total Cover		
Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u>Lyonia ligustrina</u>	3	X	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. <u>Pinus strobus</u>	3	X	FACU	
3. <u>Tsuga canadensis</u>	3	X	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	9	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u>Pteridium aquilinum</u>	10.5	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <u>Osmundastrum cinnamomeum</u>	3	X	FACW	
3. <u>Cornus canadensis</u>	3	X	FAC	
4. <u>Maianthemum canadense</u>	3	X	FACU	
5. <u>Gaultheria procumbens</u>	3	X	FACU	
6. <u>Acer rubrum</u>	3	X	FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	25	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
				Hydrophytic Vegetation Present? <u>No</u>

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland A49 wet

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 8/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland A49 wet
 Investigator(s): KK and EM Section, Township, Range: Warwick
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.70539 Long: -72.33329 Datum: _____
 Soil Map Unit: Chaffield-Hollis complex NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>2</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	SANDY_LOAM	Many fine roots and few medium roots
3-4	10YR_3/1	100		N/A	N/A	N/A	SANDY_LOAM	
4-12	10YR_4/1	100	5YR_4/6	2	C	M	SANDY_LOAM	
12-20	10YR_6/1	100	10YR_5/8	2	C	M	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland A49 wet

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. <u>Acer rubrum</u>	10.5	X	FAC	# Dominants OBL, FACW, FAC: <u>6</u> (A)
2. _____				# Dominants across all strata: <u>6</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	10	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <u>Frangula alnus</u>	3	X	FAC	Total % Cover of: <u>3.0</u> x 1 = <u>3.0</u>
2. _____				FACW <u>44.5</u> x 2 = <u>89.0</u>
3. _____				FAC <u>16.5</u> x 3 = <u>49.5</u>
4. _____				FACU <u>9.0</u> x 4 = <u>36.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>73.0</u> (A) <u>177.5</u> (B)
7. _____				Prevalence Index = B/A = <u>2.43</u>
8. _____				
	3	= Total Cover		
Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Lyonia ligustrina</u>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <u>Spiraea latifolia</u>	3	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	13	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <u>Rubus hispidus</u>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <u>Osmundastrum cinnamomeum</u>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <u>Acer rubrum</u>	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <u>Lycopus uniflorus</u>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <u>Pteridium aquilinum</u>	3		FACU	Woody vine - All woody vines, regardless of height.
6. <u>Rumex acetosella</u>	3		FACU	
7. <u>Betula lenta</u>	3		FACU	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	46	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Royalston, Massachusetts Forms

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WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W1

G-57-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/14/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-57-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range:
Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Undulating Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.69765 Long: -72.27686 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_3/3 100 N/A N/A N/A SILT_LOAM
3-6 10YR_3/6 100 N/A N/A N/A SILT_LOAM Refusal at 6
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 6
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-57-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 2 (A) # Dominants across all strata: 2 (B) % Dominants OBL, FACW, FAC: 100.00% (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum	(Plot size: 30 ft)				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		
Shrub Stratum	(Plot size: 15 ft)				
1.	<i>Ilex verticillata</i>	20.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2.	<i>Acer rubrum</i>	3		FAC	
3.	<i>Frangula alnus</i>	3		FAC	
4.	<i>Rubus pensilvanicus</i>	3		FACU	
5.	<i>Spiraea alba</i>	0		FACW	
6.	<i>Quercus rubra</i>	0		FACU	
7.					
8.					
		29	= Total Cover		
Herb Stratum	(Plot size: 5 ft)				
1.	<i>Athyrium angustum</i>	85.5	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2.	<i>Pteridium aquilinum</i>	10.5		FACU	
3.	<i>Osmunda claytoniana</i>	3		FAC	
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		99	= Total Cover		
Woody Vines	(Plot size: 30 ft)				
1.					Hydrophytic Vegetation Present? Yes
2.					
3.					
4.					
5.					
		0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% hydrophytic vegetation across all strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W1

G-57-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/14/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-57-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%WGS
 Subregion (LRR or MLRA): LRR R Lat: 42.69756 Long: -72.27671 Datum: 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>Yes</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>	
Saturation Present? <u>X</u>	Depth (inches): <u>3</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.		

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/1	100		N/A	N/A	N/A	MUCK	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input checked="" type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			

Restrictive Layer (if observed):	Hydric Soil Present? <u>Yes</u>
Type: <u>Gravel</u> Depth (inches): <u>8</u>	
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: G-57-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: 3 (A)
2. _____	_____	_____	_____	# Dominants across all strata: 3 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	0 = Total Cover			
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: Multiply By:
2. _____	_____	_____	_____	OBL _____ x 1 = _____
3. _____	_____	_____	_____	FACW _____ x 2 = _____
4. _____	_____	_____	_____	FAC _____ x 3 = _____
5. _____	_____	_____	_____	FACU _____ x 4 = _____
6. _____	_____	_____	_____	UPL _____ x 5 = _____
7. _____	_____	_____	_____	Sum: _____ (A) _____ (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = _____
	0 = Total Cover			
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Alnus incana</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Ilex verticillata</i>	3		FACW	<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	19 = Total Cover			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Acorus calamus</i>	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Panicum pensylvanicum</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Symphoricarpos novae-angliae</i>	20.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago rugosa</i>	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Rubus hispidus</i>	10.5		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Hydrocotyle verticillata</i>	10.5		OBL	
7. <i>Onoclea sensibilis</i>	3		FACW	
8. <i>Heuchera_SP</i>	3		NULL	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	134 = Total Cover			
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	0 = Total Cover			

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-55-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/14/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-55-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.69736 Long: -72.27532 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought condition
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type¹ Loc² Texture Remarks
0-8 10YR_3/3 100 N/A N/A N/A N/A LOAM
8-18 10YR_3/3 50 10YR_3/6 30 C M LOAM
10YR_2/2 20 C M
¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils³:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Hydric Soil Present? No
Depth (inches):
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-55-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%
1. Acer rubrum	20.5	X	FAC	_____ Prevalence Index is <= 3.0
2. Ilex verticillata	20.5	X	FACW	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. Juniperus communis	10.5		FACU	_____ Rapid Test for Hydrophytic Vegetation
4. Betula lenta	10.5		FACU	_____ Morphological Adaptations
5. Corylus americana	10.5		FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. Spiraea alba	3		FACW	
7. Kalmia angustifolia	3		FAC	
8. _____				
	78	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Gaultheria procumbens	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Rubus flagellaris	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Brachyelytrum erectum	20.5	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Solidago rugosa	20.5	X	FAC	Woody vine - All woody vines, regardless of height.
5. Osmundastrum cinnamomeum	10.5		FACW	
6. Pteridium aquilinum	3		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	95	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W3

G-55-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/14/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-55-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.69729 Long: -72.27523 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C5)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 3
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Sphagnum present in wetland
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-18 10YR_2/1 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.
2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
X Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-55-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. Ilex verticillata	38	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. Frangula alnus	10.5		FAC	
3. Alnus incana	10.5		FACW	
4. Betula lenta	3		FACU	
5. Acer rubrum	3		FAC	
6. _____				
7. _____				
8. _____				
<u>65</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. Hydrocotyle verticillata	38	X	OBL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. Solidago rugosa	10.5		FAC	
3. Rubus hispidus	10.5		FACW	
4. Osmundastrum cinnamomeum	3		FACW	
5. Onoclea sensibilis	0		FACW	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>62</u> = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. Vitis riparia	63		FAC	Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
<u>63</u> = Total Cover				

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-54-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/14/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-54-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.69726 Long: -72.27469 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_3/3	100	10YR_3/2	N/A	N/A	N/A	SILT_LOAM	
3-18	10YR_4/6	80		20	C	M	FINE_SANDY_LOAM	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators:						Indicators for Problematic Hydric Soils³:		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)				
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)				
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)				
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)				
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)				
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)				
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)				
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)				
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed): Type: _____ Depth (inches): _____							Hydric Soil Present? <u>No</u>	
Remarks:								

VEGETATION - Use scientific names of plants.



Sampling Point: G-54-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By:
Sapling Stratum (Plot size: 30 ft)					OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B)
					Prevalence Index = B/A = _____
Shrub Stratum (Plot size: 15 ft)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> X Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations
1.	<i>Juniperus communis</i>	38	X	FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2.	<i>Acer rubrum</i>	20.5	X	FAC	
3.	<i>Frangula alnus</i>	10.5		FAC	
4.	<i>Kalmia angustifolia</i>	10.5		FAC	
5.	<i>Gaylussacia baccata</i>	10.5		FACU	
6.	<i>Fagus grandifolia</i>	3		FACU	
7.	<i>Spiraea alba</i>	3		FACW	
8.					
		96	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Herb Stratum (Plot size: 5 ft)					
1.	<i>Cornus canadensis</i>	85.5	X	FAC	
2.	<i>Gaultheria procumbens</i>	10.5		FACU	
3.	<i>Rubus flagellaris</i>	10.5		FACU	
4.	<i>Solidago rugosa</i>	10.5		FAC	
5.	<i>Thelypteris palustris</i>	3		FACW	
6.	<i>Brachyelytrum erectum</i>	3		FACU	
7.					
8.					
9.					
10.					
11.					
12.					
		123	= Total Cover		
Woody Vines (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
		0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of vegetation across all strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W4

G-54-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/14/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-54-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.69720 Long: -72.27435 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			
Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Saturation Present?	<u> X</u>	Depth (inches):	<u>Surface</u>

Wetland Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/1	100		N/A	N/A	N/A	MUCKY_LOAM	
2-20	N_6/	80	10YR_5/6	20	C	M	FINE_SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input checked="" type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>Yes</u>
Type:	<u> </u>		
Depth (inches):	<u> </u>		

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-54-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>7</u> (A) # Dominants across all strata: <u>7</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		
Shrub Stratum	(Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1.	Acer rubrum	10.5	X	FAC	
2.	Ilex verticillata	10.5	X	FACW	
3.	Lyonia ligustrina	10.5	X	FACW	
4.	Frangula alnus	3		FAC	
5.	Spiraea alba	3		FACW	
6.					
7.					
8.					
		<u>37</u>	= Total Cover		
Herb Stratum	(Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	Osmundastrum cinnamomeum	38	X	FACW	
2.	Solidago rugosa	10.5	X	FAC	
3.	Calamagrostis canadensis	10.5	X	OBL	
4.	Onoclea sensibilis	3		FACW	
5.	Doellingeria umbellata	3		FACW	
6.	Carex lurida	3		OBL	
7.	Equisetum pratense	3		FACW	
8.	Thelypteris palustris	3		FACW	
9.	Glyceria canadensis	3		OBL	
10.	Persicaria pensylvanica	3		FACW	
11.	Eleocharis obtusa	3		OBL	
12.	Lycopus americanus	0		OBL	
		<u>83</u>	= Total Cover		
Woody Vines	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1.	Vitis riparia	3		FAC	
2.					
3.					
4.					
5.					
		<u>3</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% hydrophytic vegetation across all strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W5

G-53-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/14/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-53-UPL
Investigator(s): C.Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Flat Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.69646 Long: -72.26931 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-20 10YR_4/6 100 N/A N/A N/A N/A LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Hydric Soil Present? No
Depth (inches):
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-53-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
0 = Total Cover					
Sapling Stratum (Plot size: 30 ft)				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
0 = Total Cover					
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>	
1.	Acer rubrum	10.5	X		FAC
2.	Gaylussacia baccata	10.5	X		FACU
3.	Betula lenta	3			FACU
4.	Lyonia ligustrina	0			FACW
5.	Quercus rubra	0			FACU
6.	Ilex verticillata	0			FACW
7.					
8.					
24 = Total Cover					
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
1.	Gaultheria procumbens	38	X		FACU
2.	Osmunda spectabilis	10.5			OBL
3.	Pteridium aquilinum	10.5			FACU
4.	Lycopodium clavatum	10.5			FAC
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
69 = Total Cover					
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>No</u>	
1.					
2.					
3.					
4.					
5.					
0 = Total Cover					

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: G-53-WET
Applicant/Owner: National Grid
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.69643 Long: -72.26904 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-14 10YR_6/1 95 10YR_6/8 5 C M SAND 2 inches organics
14-17 10YR_4/3 100 N/A N/A N/A SANDY LOAM
17-20 10YR_2/1 100 N/A N/A N/A LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Sandy Redox (S5) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
X Stripped Matrix (S6) Red Parent Material (F21)
Dark Surface (S7) (LRR R, MLRA 149B) Very Shallow Dark Surface (TF12)
Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-53-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>6</u> (A) # Dominants across all strata: <u>7</u> (B) % Dominants OBL, FACW, FAC: <u>85.71%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum	(Plot size: 30 ft)				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		
Shrub Stratum	(Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1.	<i>Ilex verticillata</i>	20.5	X	FACW	
2.	<i>Acer rubrum</i>	3		FAC	
3.	<i>Betula cordifolia</i>	3		FACU	
4.	<i>Spiraea alba</i>	3		FACW	
5.					
6.					
7.					
8.					
		<u>29</u>	= Total Cover		
Herb Stratum	(Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Rubus hispidus</i>	20.5	X	FACW	
2.	<i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	
3.	<i>Scirpus atrovirens</i>	10.5	X	OBL	
4.	<i>Carex folliculata</i>	10.5	X	OBL	
5.	<i>Brachyelytrum erectum</i>	10.5	X	FACU	
6.	<i>Thelypteris palustris</i>	10.5	X	FACW	
7.					
8.					
9.					
10.					
11.					
12.					
		<u>73</u>	= Total Cover		
Woody Vines	(Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>
1.					
2.					
3.					
4.					
5.					
		<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W6

G-91-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/22/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-91-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Undulating Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.69547 Long: -72.26321 Datum: WGS 1984
Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-8 10YR_3/4 100 N/A N/A N/A SILT_LOAM
8-13 10YR_3/6 100 N/A N/A N/A SILT_LOAM Refusal at 13
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Rock Hydric Soil Present? No
Depth (inches): 13
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-91-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.					Dominance Test Worksheet:	
2.					# Dominants OBL, FACW, FAC: 1 (A)	
3.					# Dominants across all strata: 2 (B)	
4.					% Dominants OBL, FACW, FAC: 50.00% (A/B)	
5.						
6.						
7.						
8.						
		0	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)					Total % Cover of: Multiply By:	
1.					OBL	x 1 =
2.					FACW	x 2 =
3.					FAC	x 3 =
4.					FACU	x 4 =
5.					UPL	x 5 =
6.					Sum:	(A) (B)
7.					Prevalence Index = B/A =	
8.						
		0	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)					Dominance Test is > 50%	
1.	Kalmia angustifolia	63	X	FAC	Prevalence Index is <= 3.0	
2.	Acer rubrum	10.5		FAC	Problematic Hydrophytic Vegetation ¹ (explain)	
3.	Spiraea alba	10.5		FACW	Rapid Test for Hydrophytic Vegetation	
4.	Lyonia ligustrina	3		FACW	Morphological Adaptations	
5.	Juniperus communis	3		FACU	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
6.	Frangula alnus	3		FAC		
7.					Definitions of Vegetation Strata:	
8.					Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
		93	= Total Cover		Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
Herb Stratum (Plot size: 5 ft)					Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
1.	Gaultheria procumbens	20.5	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
2.	Elymus virginicus	3		FACW	Woody vine - All woody vines, regardless of height.	
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
		23	= Total Cover		Hydrophytic Vegetation Present? No	
Woody Vines (Plot size: 30 ft)						
1.						
2.						
3.						
4.						
5.						
		0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W6

G-91-WET

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: G-91-WET
Applicant/Owner: National Grid
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.69550 Long: -72.26349 Datum: WGS 1984
Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? Yes
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-8 10YR_2/1 100 N/A N/A N/A MUCKY_LOAM Refusal at 8
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) X Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Rock Hydric Soil Present? Yes
Depth (inches): 8
Remarks: Note that the TF12 indicator has been approved and is now F22 but the form has not been updated. Soils also meet F1 but indicator cannot be used in LRR 4

VEGETATION - Use scientific names of plants.



Sampling Point: G-91-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
0 = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
0 = Total Cover				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
Shrub Stratum (Plot size: 15 ft)				
1. Ilex verticillata	38	X	FACW	
2. Spiraea alba	38	X	FACW	
3. Lyonia ligustrina	20.5		FACW	
4. Acer rubrum	10.5		FAC	
5. Alnus incana	3		FACW	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
110 = Total Cover				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
Herb Stratum (Plot size: 5 ft)				
1. Rubus hispidus	63	X	FACW	
2. Carex folliculata	38	X	OBL	
3. Symphyotrichum novae-angliae	3		FACW	
4. Onoclea sensibilis	3		FACW	
5. Euthamia graminifolia	0		FAC	
6. Juncus effusus	0		OBL	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
107 = Total Cover				
Woody Vines (Plot size: 30 ft)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0 = Total Cover				Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-90-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-90-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.69509 Long: -72.26032 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_2/1 100 N/A N/A N/A LOAM
4-8 10YR_3/6 100 N/A N/A N/A SANDY_LOAM Refusal at 8
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Rock Hydric Soil Present? No
Depth (inches): 8
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-90-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of: Multiply By:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%
1. <i>Kalmia angustifolia</i>	63	X	FAC	_____ Prevalence Index is <= 3.0
2. <i>Ilex verticillata</i>	10.5		FACW	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Acer rubrum</i>	10.5		FAC	_____ Rapid Test for Hydrophytic Vegetation
4. <i>Juniperus communis</i>	10.5		FACU	_____ Morphological Adaptations
5. <i>Lyonia ligustrina</i>	3		FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. <i>Pinus strobus</i>	3		FACU	
7. <i>Spiraea alba</i>	0		FACW	
8. _____				
	100	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus flagellaris</i>	63	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Pteridium aquilinum</i>	38	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Dendrolycopodium obscurum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	104	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-90-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-90-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.69498 Long: -72.26013 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> X Saturation (A3)	<input type="checkbox"/>	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/>	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X Microtopographic Relief (D4)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u> </u> Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	<u> </u> Depth (inches): <u>N/A</u>		
Saturation Present?	<input checked="" type="checkbox"/> X <u> </u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/1	100		N/A	N/A	N/A	MUCKY_LOAM	Refusal at 6

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input checked="" type="checkbox"/> X Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>	<u>6</u>	<u>Yes</u>	
Depth (inches):			
Remarks: Note that the TF12 indicator has been approved and is now F22 but the form has not been updated			

VEGETATION - Use scientific names of plants.



Sampling Point: G-90-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. <i>Ilex verticillata</i>	20.5	X	FACW	
3. <i>Kalmia angustifolia</i>	3		FAC	
4. <i>Acer rubrum</i>	3		FAC	
5. <i>Betula lenta</i>	3		FACU	
6. <i>Tsuga canadensis</i>	0		FACU	
7. _____				
8. _____				
<u>50</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Carex folliculata</i>	10.5	X	OBL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	
3. <i>Thelypteris palustris</i>	3		FACW	
4. <i>Rubus hispidus</i>	3		FACW	
5. <i>Doellingeria umbellata</i>	3		FACW	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>30</u> = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) is present; parameter is met. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-88-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-88-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.69477 Long: -72.25868 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditinos
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	

Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_3/4	100		N/A	N/A	N/A	LOAM	Refusal at 5

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>5</u>	Hydric Soil Present? <u>No</u>
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Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-88-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
			<u>0</u> = Total Cover	Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
			<u>0</u> = Total Cover	
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Kalmia angustifolia</i>	63	X	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Acer rubrum</i>	10.5		FAC	
3. <i>Ilex verticillata</i>	10.5		FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
			<u>84</u> = Total Cover	
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Gaultheria procumbens</i>	63	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Athyrium asplenoides</i>	63	X	FAC	
3. <i>Rubus hispidus</i>	3		FACW	
4. <i>Osmundastrum cinnamomeum</i>	3		FACW	
5. <i>Pteridium aquilinum</i>	3		FACU	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
			<u>135</u> = Total Cover	
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
			<u>0</u> = Total Cover	

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all strata FAC or wetter; parameter is met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-88-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-88-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range:
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.69479 Long: -72.25887 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline Easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes	Is This Sample Area Within a Wetland? Yes
Hydric Soil Present? Yes	
Wetland Hydrology Present? Yes	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? _____	Depth (inches): N/A	Wetland Hydrology Present? Yes
Water Table Present? _____	Depth (inches): N/A	
Saturation Present? _____	Depth (inches): N/A	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.		

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_3/1	100		N/A	N/A	N/A	LOAM	
1-10	10YR_5/1	92	7.5YR_5/6	8	C	M	SANDY_LOAM	Refusal at 10
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.								
² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :					
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)				
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)				
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)				
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)				
<input type="checkbox"/> Stratified Layers (A5)			<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)				
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)				
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)				
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)				
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)				
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed):			Hydric Soil Present? Yes					
Type: Rock								
Depth (inches): 10								
Remarks:								
Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.								

VEGETATION - Use scientific names of plants.



Sampling Point: G-88-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Acer rubrum</i>	10.5	X	FAC	
2. <i>Ilex verticillata</i>	10.5	X	FACW	
3. <i>Spiraea alba</i>	10.5	X	FACW	
4. <i>Lyonia ligustrina</i>	3		FACW	
5. <i>Betula lenta</i>	3		FACU	
6. <i>Kalmia angustifolia</i>	0		FAC	
7. _____				
8. _____				
	37	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Osmunda spectabilis</i>	20.5	X	OBL	
2. <i>Osmundastrum cinnamomeum</i>	20.5	X	FACW	
3. <i>Athyrium angustum</i>	20.5	X	FAC	
4. <i>Rubus hispidus</i>	3		FACW	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	64	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Dominance Test Worksheet:
 # Dominants OBL, FACW, FAC: 6 (A)
 # Dominants across all strata: 6 (B)
 % Dominants OBL, FACW, FAC: 100.00% (A/B)

Prevalence Index Worksheet:
 Total % Cover of: **Multiply By:**
 OBL _____ x 1 = _____
 FACW _____ x 2 = _____
 FAC _____ x 3 = _____
 FACU _____ x 4 = _____
 UPL _____ x 5 = _____
 Sum: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 Dominance Test is > 50%
 Prevalence Index is <= 3.0
 Problematic Hydrophytic Vegetation¹ (explain)
 Rapid Test for Hydrophytic Vegetation
 Morphological Adaptations

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-89-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 11/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-89-UPL
Investigator(s): C. Cyrus and E. Martin Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.69453 Long: -72.25704 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-8 10YR_3/2 95 10YR_3/4 5 C M LOAM Refusal at 8 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Rock Hydric Soil Present? No
Depth (inches): 8
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-89-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Acer rubrum</i>	20.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Kalmia angustifolia</i>	10.5	X	FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Betula lenta</i>	3		FACU	<input type="checkbox"/> Morphological Adaptations
5. _____				
6. _____				
7. _____				
8. _____				
	<u>44</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	85.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	20.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dennstaedtia punctilobula</i>	10.5		UPL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Dendrolycopodium obscurum</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>130</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Indicator 2 (Dominance Test) present with >50% of dominant species across all strata FAC or wetter; parameter is met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-89-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-89-WET
 Investigator(s): C. Cyrus and E Martin Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.69447 Long: -72.25713 Datum: WGS 1984 PSS
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: <u>All parameters are met; area is classified as a palustrine scrub-shrub (PSS) wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	<u>X</u> Depth (inches): _____		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>At least one primary or two secondary indicators of wetland hydrology present; parameter is met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR_2/1	95	10YR_3/3	5	C	M	LOAM	
10-18	10YR_4/1	95	10YR_4/6	5	C	M	LOAM	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.								
² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :					
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)		
<input type="checkbox"/> Stratified Layers (A5)			<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input checked="" type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)		
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)						<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)		
<input type="checkbox"/> Sandy Redox (S5)						<input type="checkbox"/> Red Parent Material (F21)		
<input type="checkbox"/> Stripped Matrix (S6)						<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)						<input type="checkbox"/> Other (Explain in Remarks)		
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed):			Hydric Soil Present?					
Type:			<u>Yes</u>					
Depth (inches):								
Remarks:								

VEGETATION - Use scientific names of plants.



Sampling Point: G-89-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet:	
2. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)	
3. _____				# Dominants across all strata: <u>3</u> (B)	
4. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)	
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)				Total % Cover of: <u> </u> Multiply By: <u> </u>	
1. _____				OBL <u> </u>	x 1 = <u> </u>
2. _____				FACW <u> </u>	x 2 = <u> </u>
3. _____				FAC <u> </u>	x 3 = <u> </u>
4. _____				FACU <u> </u>	x 4 = <u> </u>
5. _____				UPL <u> </u>	x 5 = <u> </u>
6. _____				Sum: <u> </u> (A)	<u> </u> (B)
7. _____				Prevalence Index = B/A = <u> </u>	
8. _____					
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations	
1. Ilex verticillata	20.5	X	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. Lyonia ligustrina	10.5	X	FACW		
3. Pinus strobus	0		FACU		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>31</u>	= Total Cover		Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
1. Osmundastrum cinnamomeum	85.5	X	FACW	Woody vine - All woody vines, regardless of height. Hydrophytic Vegetation Present? <u> </u> Yes	
2. Rubus flagellaris	3		FACU		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	<u>88</u>	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).

Indicator 2 (Dominance Test) present with >50% of dominant vegetation across all strata FAC or wetter; parameter is met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-100-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-100-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Undulating Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.69279 Long: -72.25049 Datum: _____
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_5/3	100		N/A	N/A	N/A	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>6</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-100-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 40.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	_____ Dominance Test is > 50%
2. <i>Betula lenta</i>	10.5	X	FACU	_____ Prevalence Index is <= 3.0
3. <i>Kalmia angustifolia</i>	10.5	X	FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Quercus rubra</i>	3		FACU	_____ Rapid Test for Hydrophytic Vegetation
5. <i>Pinus strobus</i>	3		FACU	_____ Morphological Adaptations
6. <i>Acer rubrum</i>	3		FAC	
7. <i>Quercus falcata</i>	3		FACU	
8. _____				
	53	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedia punctilobula</i>	63	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pteridium aquilinum</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus flagellaris</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Parthenocissus quinquefolia</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	97	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W10

G-100-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-100-WET
 Investigator(s): C.Cyrus, D.Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.69291 Long: -72.25071 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present? <u>Yes</u>	
Surface Water Present? _____	Depth (inches): <u>N/A</u>		
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_4/2	97	10YR_6/1	3	D	M	SILT_LOAM	Refusal at 8
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators:					Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)				
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)				
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)				
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)				
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)				
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)				
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)				
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)				
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed):					Hydric Soil Present? <u>Yes</u>			
Type: <u>Rock</u>								
Depth (inches): <u>8</u>								
Remarks:								

VEGETATION - Use scientific names of plants.



Sampling Point: G-100-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 1 x 1 = 1
3. _____				FACW 5 x 2 = 10
4. _____				FAC 2 x 3 = 6
5. _____				FACU 3 x 4 = 12
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 11 (A) 29 (B)
8. _____				Prevalence Index = B/A = 3.06
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer pensylvanicum</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Morphological Adaptations
6. <i>Betula lenta</i>	3		FACU	
7. _____				
8. _____				
	95	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Onoclea sensibilis</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Aralia nudicaulis</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Carex folliculata</i>	3		OBL	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	75	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				<input type="checkbox"/> Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-87-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-87-UPL
 Investigator(s): C> Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.69053 Long: -72.24356 Datum: WGS 1984
 Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR_3/4	100		N/A	N/A	N/A	LOAM	
15-17	10YR_5/8	100		N/A	N/A	N/A	LOAM	
17-18	10YR_6/4	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-87-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>0</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>0.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				_____ Dominance Test is > 50%
1. Malus_SP	3	X	NULL	_____ Prevalence Index is <= 3.0
2. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				_____ Rapid Test for Hydrophytic Vegetation
4. _____				_____ Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>3</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Rubus flagellaris	85.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Festuca rubra	38	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Symphyotrichum pilosum	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Achillea millefolium	10.5		FACU	Woody vine - All woody vines, regardless of height.
5. Solidago rugosa	3		FAC	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>147</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W11

G-87-WET

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: G-87-WET
Applicant/Owner: National Grid
Investigator(s): C. Cyrus, D. Robertson
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.69057 Long: -72.24387 Datum: WGS 1984
Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? No
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations: Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type¹ Loc² Texture Remarks
0-8 10YR_2/1 100 N/A N/A N/A MUCKY_LOAM Refusal at 8
Hydric Soil Indicators: Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils³:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed): Type: Rock
Depth (inches): 8
Hydric Soil Present? Yes
Remarks: Note that the TF12 indicator has been approved and is now F22 but the form has not been updated. Soils also meet F1 but indicator cannot be used in LRR 4.

VEGETATION - Use scientific names of plants.



Sampling Point: G-87-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 2 (A) # Dominants across all strata: 2 (B) % Dominants OBL, FACW, FAC: 100.00% (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum	(Plot size: 30 ft)				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		
Shrub Stratum	(Plot size: 15 ft)				
1.	<i>Frangula alnus</i>	85.5	X	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2.	<i>Alnus incana</i>	3		FACW	
3.	<i>Lyonia ligustrina</i>	3		FACW	
4.					
5.					
6.					
7.					
8.					
		91	= Total Cover		
Herb Stratum	(Plot size: 5 ft)				
1.	<i>Calamagrostis canadensis</i>	85.5	X	OBL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2.	<i>Onoclea sensibilis</i>	10.5		FACW	
3.	<i>Thelypteris palustris</i>	3		FACW	
4.	<i>Osmundastrum cinnamomeum</i>	3		FACW	
5.	<i>Hypericum fraseri</i>	3		OBL	
6.	<i>Euthamia graminifolia</i>	3		FAC	
7.	<i>Symphotrichum novae-angliae</i>	3		FACW	
8.	<i>Rubus hispida</i>	3		FACW	
9.					
10.					
11.					
12.					
		114	= Total Cover		
Woody Vines	(Plot size: 30 ft)				
1.					Hydrophytic Vegetation Present? Yes
2.					
3.					
4.					
5.					
		0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Indicator 2 (Dominance Test) present with >50% of dominant species across all strata FAC or wetter. Parameter is met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-86-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-86-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Undulating Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.68938 Long: -72.24020 Datum: zWGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PFO
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_3/3	100		N/A	N/A	N/A	LOAM	
1-18	10YR_5/6	100		N/A	N/A	N/A	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-86-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.					Dominance Test Worksheet:	
2.					# Dominants OBL, FACW, FAC: 3 (A)	
3.					# Dominants across all strata: 5 (B)	
4.					% Dominants OBL, FACW, FAC: 60.00% (A/B)	
5.						
6.						
7.						
8.						
		0	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)					Total % Cover of: Multiply By:	
1.					OBL _____ x 1 = _____	
2.					FACW _____ x 2 = _____	
3.					FAC _____ x 3 = _____	
4.					FACU _____ x 4 = _____	
5.					UPL _____ x 5 = _____	
6.					Sum: _____ (A)	_____ (B)
7.					Prevalence Index = B/A = _____	
8.						
		0	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)					<input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations	
1.	Kalmia angustifolia	3	X	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2.	Frangula alnus	3	X	FAC		
3.						
4.						
5.						
6.						
7.						
8.						
		6	= Total Cover		Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)					Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
1.	Rubus flagellaris	20.5	X	FACU		
2.	Dennstaedtia punctilobula	10.5	X	UPL		
3.	Elymus virginicus	10.5	X	FACW		
4.	Dichanthelium clandestinum	3		FACW		
5.	Solidago canadensis	3		FACU		
6.	Plantago_SP	3		NULL		
7.						
8.						
9.						
10.						
11.						
12.						
		50	= Total Cover		Hydrophytic Vegetation Present? Yes _____	
Woody Vines (Plot size: 30 ft)						
1.						
2.						
3.						
4.						
5.						
		0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of vegetation across all strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-86-WET

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: G-86-WET
 Applicant/Owner: National Grid Samp. Date: 9/21/2020
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range:
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.68932 Long: -72.24047 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? <u> </u> Depth (inches): <u>N/A</u> Water Table Present? <u>X</u> Depth (inches): <u>Surface</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR_2/1	100		N/A	N/A	N/A	MUCK	Refusal at 16

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input checked="" type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>16</u>	Hydric Soil Present? <u>Yes</u>
Remarks: Soil appeared to meet indicator F1 which is not an allowable hydric soil indicator in LRR R	

VEGETATION - Use scientific names of plants.



Sampling Point: G-86-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling Stratum (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>	
Shrub Stratum (Plot size: 15 ft)					
1. Spiraea alba	3	X	FACW		
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>3</u>	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
Herb Stratum (Plot size: 5 ft)					
1. Juncus acuminatus	63	X	OBL		
2. Dulichium arundinaceum	38	X	OBL		
3. Lysimachia terrestris	20.5		OBL		
4. Scirpus cyperinus	10.5		OBL		
5. Typha latifolia	10.5		OBL		
6. Hypericum mutilum	10.5		FACW		
7. Carex lurida	10.5		OBL		
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	<u>163</u>	= Total Cover			
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-85-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/21/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-85-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Swell Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.68869 Long: -72.23835 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline easement
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_3/3	100		N/A	N/A	N/A	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>6</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No indicators of hydric soil present and does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-85-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>7</u> (A)
2. _____				# Dominants across all strata: <u>9</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>77.78%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u> </u> Multiply By: <u> </u>
2. _____				OBL <u> </u> x 1 = <u> </u>
3. _____				FACW <u> </u> x 2 = <u> </u>
4. _____				FAC <u> </u> x 3 = <u> </u>
5. _____				FACU <u> </u> x 4 = <u> </u>
6. _____				UPL <u> </u> x 5 = <u> </u>
7. _____				Sum: <u> </u> (A) <u> </u> (B)
8. _____				Prevalence Index = B/A = <u> </u>
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Kalmia latifolia	38	X	FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Frangula alnus	38	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>114</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Athyrium asplenoides	20.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Onoclea sensibilis	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Doellingeria umbellata	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Rubus hispidus	10.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Rubus flagellaris	10.5	X	FACU	Woody vine - All woody vines, regardless of height.
6. Osmundastrum cinnamomeum	10.5	X	FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>83</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W13

G-85-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-85-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Profile moist but not saturated as evidenced by lack of glistening ped faces and absence of an existing water table.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-12 10YR_2/2 97 10YR_4/6 3 C M SILT_LOAM Refusal at 12
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Rock
Depth (inches): 12
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-85-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
		0	= Total Cover	

Sapling Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
		0	= Total Cover	

Shrub Stratum	(Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1.	<i>Alnus incana</i>	38	X	FACW
2.	<i>Ilex verticillata</i>	38	X	FACW
3.	<i>Kalmia latifolia</i>	3		FACU
4.				
5.				
6.				
7.				
8.				
		79	= Total Cover	

Herb Stratum	(Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1.	<i>Calamagrostis canadensis</i>	85.5	X	OBL
2.	<i>Glyceria striata</i>	20.5		OBL
3.	<i>Solidago gigantea</i>	20.5		FACW
4.	<i>Onoclea sensibilis</i>	20.5		FACW
5.	<i>Parthenocissus quinquefolia</i>	3		FACU
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		150	= Total Cover	

Woody Vines	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1.	<i>Parthenocissus quinquefolia</i>	3		FACU
2.				
3.				
4.				
5.				
		3	= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 3 (A)

Dominants across all strata: 4 (B)

% Dominants OBL, FACW, FAC: 75.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of: Multiply By:

OBL _____ x 1 = _____

FACW _____ x 2 = _____

FAC _____ x 3 = _____

FACU _____ x 4 = _____

UPL _____ x 5 = _____

Sum: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W14

G-47-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: 47/up
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.68779 Long: -72.23556 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_4/3 100 N/A N/A N/A SILT_LOAM
6-18 10YR_3/6 100 N/A N/A N/A SILT_LOAM
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-47-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 25.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	10.5	X	FACW	_____ Prevalence Index is <= 3.0
3. <i>Spiraea alba</i>	3		FACW	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	63	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus hispidus</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dendrolycopodium obscurum</i>	0		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	94	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W14

G-47-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-47-WET
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.68771 Long: -72.23541 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-5 10YR_4/1 95 10YR_6/1 5 D M SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 5
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-47-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Ilex verticillata</i>	63	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Spiraea alba</i>	20.5	X	FACW	
3. <i>Frangula alnus</i>	10.5		FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>94</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Onoclea sensibilis</i>	10.5	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Glyceria canadensis</i>	10.5	X	OBL	
3. <i>Toxicodendron radicans</i>	3		FAC	
4. <i>Lycopus americanus</i>	3		OBL	
5. <i>Solidago rugosa</i>	3		FAC	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>30</u> = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-48-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-48-UPL
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.68718 Long: -72.23396 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: Drought conditions
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Table with 9 columns: Depth (in), Matrix Color (moist), %, Redox Features Color (moist), %, Type1, Loc2, Texture, Remarks. Rows for depths 1-5, 5-8, 8-18 showing SILT_LOAM texture.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-48-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. Spiraea alba	3	X	FACW	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Betula lenta	3	X	FACU	
3. Pinus strobus	0		FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	6	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. Dennstaedia punctilobula	38	X	UPL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. Rubus hispidus	10.5		FACW	
3. Dendrolycopodium obscurum	3		FACU	
4. Dichanthelium dichotomum	3		FAC	
5. Gaultheria procumbens	3		FACU	
6. Lycopodium clavatum	0		FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	57	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
Hydrophytic Vegetation Present? <u>No</u>				

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-48-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-48-WET
 Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.68722 Long: -72.23426 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	Yes		
Wetland Hydrology Present?	Yes		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): N/A	Yes	
Water Table Present?	Depth (inches): N/A		
Saturation Present?	Depth (inches): Surface		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/1	100		N/A	N/A	N/A	MUCK	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input checked="" type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed): Type: Bedrock Depth (inches): 8		Hydric Soil Present?	
		Yes	
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: G-48-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>8</u> (A) # Dominants across all strata: <u>9</u> (B) % Dominants OBL, FACW, FAC: <u>88.89%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: <u> </u> Multiply By: <u> </u> OBL <u> </u> x 1 = <u> </u> FACW <u> </u> x 2 = <u> </u> FAC <u> </u> x 3 = <u> </u> FACU <u> </u> x 4 = <u> </u> UPL <u> </u> x 5 = <u> </u> Sum: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Spiraea alba</i>	38	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Ilex verticillata</i>	38	X	FACW	
3. <i>Viburnum dentatum</i>	3		FAC	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>79</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Glyceria canadensis</i>	38	X	OBL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Thelypteris palustris</i>	10.5	X	FACW	
3. <i>Onoclea sensibilis</i>	10.5	X	FACW	
4. <i>Typha latifolia</i>	10.5	X	OBL	
5. <i>Carex crinita</i>	10.5	X	OBL	
6. <i>Doellingeria umbellata</i>	10.5	X	FACW	
7. <i>Viola_SP</i>	10.5	X	NULL	
8. <i>Chelone glabra</i>	3		OBL	
9. <i>Lycopus americanus</i>	3		OBL	
10. <i>Hydrocotyle americana</i>	3		OBL	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>110</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? <u>Yes</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W16

G-49-UPL

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: G-49-UPL
Applicant/Owner: National Grid
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.68701 Long: -72.23337 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/1 100 N/A N/A N/A SILT_LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 6
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-49-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%
1. <i>Kalmia angustifolia</i>	63	X	FAC	_____ Prevalence Index is <= 3.0
2. <i>Gaylussacia baccata</i>	63	X	FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Tsuga canadensis</i>	3		FACU	_____ Rapid Test for Hydrophytic Vegetation
4. <i>Pinus strobus</i>	0		FACU	_____ Morphological Adaptations
5. _____				
6. _____				
7. _____				
8. _____				
	129	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	85.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	63	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Dendrolycopodium obscurum</i>	0		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Cornus canadensis</i>	0		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Lycopodium clavatum</i>	0		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	148	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-49-WET

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: G-49-WET
Applicant/Owner: National Grid
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.68703 Long: -72.23350 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) X Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? Yes
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_2/1 100 N/A N/A N/A N/A MUCKY_LOAM
3-6 10YR_5/1 95 10YR_5/6 5 C PL SANDY_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators: Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Indicators for Problematic Hydric Soils3:
Histosol (A1) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) 3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? Yes
Depth (inches): 6
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-49-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Lyonia ligustrina</i>	38	X	FACW	
2. <i>Ilex verticillata</i>	3		FACW	
3. <i>Spiraea alba</i>	3		FACW	
4. <i>Kalmia angustifolia</i>	3		FAC	
5. <i>Betula cordifolia</i>	3		FACU	
6. <i>Kalmia latifolia</i>	0		FACU	
7. _____				
8. _____				
	50	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Rubus hispidus</i>	38	X	FACW	
2. <i>Dennstaedtia punctilobula</i>	3		UPL	
3. <i>Onoclea sensibilis</i>	3		FACW	
4. <i>Thelypteris palustris</i>	3		FACW	
5. <i>Gaultheria procumbens</i>	3		FACU	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	50	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 2 (A)

Dominants across all strata: 2 (B)

% Dominants OBL, FACW, FAC: 100.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply By:	
OBL _____ x 1 = _____		
FACW _____ x 2 = _____		
FAC _____ x 3 = _____		
FACU _____ x 4 = _____		
UPL _____ x 5 = _____		
Sum: _____ (A)		_____ (B)
Prevalence Index = B/A = _____		

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W17

G-50-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-50-UPL
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.68588 Long: -72.22996 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-5 10YR_3/6 100 N/A N/A N/A SILT_LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 5
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-50-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status				
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>0</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>0.00%</u> (A/B)			
2.								
3.								
4.								
5.								
6.								
7.								
8.								
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____			
Sapling Stratum	(Plot size: 30 ft)							
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
		0	= Total Cover		Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
Shrub Stratum	(Plot size: 15 ft)							
1.	<i>Gaylussacia baccata</i>	38	X	FACU				
2.	<i>Kalmia latifolia</i>	3		FACU				
3.	<i>Kalmia angustifolia</i>	3		FAC				
4.								
5.								
6.								
7.								
8.								
		44	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.			
Herb Stratum	(Plot size: 5 ft)							
1.	<i>Gaultheria procumbens</i>	38	X	FACU				
2.	<i>Pteridium aquilinum</i>	38	X	FACU				
3.	<i>Dendrolycopodium obscurum</i>	20.5	X	FACU				
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
		96	= Total Cover					
Woody Vines	(Plot size: 30 ft)							
1.								
2.								
3.								
4.								
5.								
		0	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>			

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W17

G-50-WET

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: G-50-WET
Applicant/Owner: National Grid
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.68587 Long: -72.23027 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
X Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? Yes
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/1 100 N/A N/A N/A N/A MUCKY_LOAM
6-10 Gley 1 6/10y 95 10YR_5/6 5 C M LOAM
10-18 Gley 1 6/10y 90 10YR_5/6 10 C M LOAMY_SAND
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) X Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Hydric Soil Present? Yes
Depth (inches):
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-50-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.					Dominance Test Worksheet:	
2.					# Dominants OBL, FACW, FAC: 5 (A)	
3.					# Dominants across all strata: 5 (B)	
4.					% Dominants OBL, FACW, FAC: 100.00% (A/B)	
5.						
6.						
7.						
8.						
		0	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)					Total % Cover of:	Multiply By:
1.					OBL _____ x 1 = _____	
2.					FACW _____ x 2 = _____	
3.					FAC _____ x 3 = _____	
4.					FACU _____ x 4 = _____	
5.					UPL _____ x 5 = _____	
6.					Sum: _____ (A)	_____ (B)
7.					Prevalence Index = B/A = _____	
8.						
		0	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)					<input checked="" type="checkbox"/> Dominance Test is > 50%	
1. <i>Lyonia ligustrina</i>		38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0	
2. <i>Spiraea alba</i>		10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)	
3. <i>Ilex verticillata</i>		3		FACW	<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation	
4.					Morphological Adaptations	
5.						
6.						
7.						
8.						
		51	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Herb Stratum (Plot size: 5 ft)					Definitions of Vegetation Strata:	
1. <i>Rubus hispidus</i>		20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
2. <i>Leersia oryzoides</i>		20.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
3. <i>Juncus effusus</i>		20.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
4. <i>Scirpus cyperinus</i>		3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
5.					Woody vine - All woody vines, regardless of height.	
6.						
7.						
8.						
9.						
10.						
11.						
12.						
		64	= Total Cover		Hydrophytic Vegetation Present? <input type="checkbox"/> Yes	
Woody Vines (Plot size: 30 ft)						
1.						
2.						
3.						
4.						
5.						
		0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) is present; parameter is met. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W18

G-51-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-51-UPL
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.68531 Long: -72.22802 Datum: WGS 1984
Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_4/4 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 4
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-51-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Juniperus communis</i>	3	X	FACU	_____ Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	3	X	FACW	_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	6	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	98	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pteridium aquilinum</i>	10.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	108	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-51-WET
Investigator(s): C Cyrus N Newberry Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.68533 Long: -72.22816 Datum:
Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
X Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/1 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-51-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Shrub Stratum	(Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	<i>Ilex verticillata</i>	98	X	FACW	
2.	<i>Spiraea alba</i>	3		FACW	
3.	<i>Frangula alnus</i>	3		FAC	
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
Herb Stratum	(Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	<i>Rubus hispidus</i>	3	X	FACW	
2.	<i>Parthenocissus quinquefolia</i>	3	X	FACU	
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		<u>6</u>	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
Woody Vines	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					
2.					
3.					
4.					
5.					
		<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W19

G-52-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-52-UPL
Investigator(s): C Cyrus N Newberry Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 1-2%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_3/4 100 N/A N/A N/A SILT_LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 2
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-52-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Prevalence Index Worksheet:				
# Dominants OBL, FACW, FAC: <u>1</u> (A)				
# Dominants across all strata: <u>2</u> (B)				
% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)				
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Prevalence Index Worksheet:				
Total % Cover of: Multiply By:				
OBL _____	x 1 =	_____		
FACW _____	x 2 =	_____		
FAC _____	x 3 =	_____		
FACU _____	x 4 =	_____		
UPL _____	x 5 =	_____		
Sum: _____ (A)		_____ (B)		
Prevalence Index = B/A = _____				
Shrub Stratum (Plot size: 15 ft)				
1. <i>Kalmia angustifolia</i>	10.5	X	FAC	
2. <i>Pinus strobus</i>	3		FACU	
3. <i>Juniperus communis</i>	3		FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	16	= Total Cover		
Hydrophytic Vegetation Indicators:				
_____ Dominance Test is > 50%				
_____ Prevalence Index is <= 3.0				
_____ Problematic Hydrophytic Vegetation ¹ (explain)				
_____ Rapid Test for Hydrophytic Vegetation				
_____ Morphological Adaptations				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Herb Stratum (Plot size: 5 ft)				
1. <i>Gaultheria procumbens</i>	63	X	FACU	
2. <i>Maianthemum canadense</i>	10.5		FACU	
3. <i>Andropogon virginicus</i>	10.5		FACU	
4. <i>Pteridium aquilinum</i>	10.5		FACU	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	94	= Total Cover		
Definitions of Vegetation Strata:				
Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).				
Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.				
Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.				
Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.				
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
Woody vine - All woody vines, regardless of height.				
Hydrophytic Vegetation Present? <u>No</u>				

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-52-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-52-WET
 Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.68333 Long: -72.22224 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? _____	

Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present? _____ Depth (inches): N/A

Water Table Present? _____ Depth (inches): N/A

Saturation Present? X Depth (inches): Surface

Wetland Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
 Localized inundation to an inch. Sphagnum throughout.

Remarks: At least primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/1	100		N/A	N/A	N/A	MUCKY LOAM	
8-10	10YR_3/3	100		N/A	N/A	N/A	LOAMY SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)
		<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: Gravel
 Depth (inches): 10

Hydric Soil Present? Yes

Remarks: Soils appeared to meet F1 indicator; however, F1 is not approved for use in LRR R

VEGETATION - Use scientific names of plants.



Sampling Point: G-52-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Alnus incana</i>	38	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Viburnum dentatum</i>	20.5	X	FAC	
3. <i>Spiraea alba</i>	10.5		FACW	
4. <i>Viburnum nudum</i>	10.5		FACW	
5. _____				
6. _____				
7. _____				
8. _____				
	<u>79</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Osmundastrum cinnamomeum</i>	63	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Symphotrichum novae-angliae</i>	20.5		FACW	
3. <i>Carex crinita</i>	10.5		OBL	
4. <i>Glyceria canadensis</i>	10.5		OBL	
5. <i>Calamagrostis canadensis</i>	10.5		OBL	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>115</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

F17 upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F17 upland
 Investigator(s): DCR DMH Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Undulating Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.68011 Long: -72.21327 Datum: _____
 Soil Map Unit: Naumburg fine sandy loam, 0 to 5 percent slopes NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions present
 Are Normal Circumstances present? no If needed, explain any answers in Remarks: Drought conditions present
 Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Remarks: Maintained ROW
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>no</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>no</u>	
Wetland Hydrology Present? <u>no</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>no</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_3/3	100		N/A	N/A	N/A	LOAM	
3-20	7.5YR_4/6	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>no</u>
Remarks:	
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.	

VEGETATION - Use scientific names of plants.



Sampling Point: F17 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 2 x 2 = 4
3. _____				FAC 3 x 3 = 9
4. _____				FACU 7 x 4 = 28
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 12 (A) 41 (B)
7. _____				Prevalence Index = B/A = 3.48
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Kalmia angustifolia	20.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Vaccinium stamineum	10.5		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Fagus grandifolia	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. Viburnum nudum	3		FACW	<input type="checkbox"/> Morphological Adaptations
6. Alnus incana	3		FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	60	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus flagellaris	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Lycopodium clavatum	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Brachyelytrum erectum	20.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Gaultheria procumbens	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Lysimachia quadrifolia	3		FACU	Woody vine - All woody vines, regardless of height.
6. Solidago canadensis	3		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	113	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? no
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

F17

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F17
 Investigator(s): DCR DMH Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.68004 Long: -72.21294 Datum: _____
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions present
 Are Normal Circumstances present? no If needed, explain any answers in Remarks: Drought conditions present
 Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Remarks: Maintained ROW
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>yes</u>		
Wetland Hydrology Present?	<u>yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>7</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-3	10YR_3/1	97	10YR_3/6	3	C	M,PL	SILTY_CLAY_LOAM
3-29	2.5Y_4/1	85	10YR_5/8	15	C	M,PL	SANDY_CLAY_LOAM

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>yes</u>	
Remarks:			
Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: F17

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 3 x 1 = 3
3. _____				FACW 4 x 2 = 8
4. _____				FAC 2 x 3 = 6
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 9 (A) 17 (B)
8. _____				Prevalence Index = B/A = 2.42
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Viburnum dentatum</i>	20.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	10.5		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Ilex verticillata</i>	10.5		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Viburnum nudum</i>	10.5		FACW	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	90	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Carex vesicaria</i>	63	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Calamagrostis canadensis</i>	38	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Scirpus cyperinus</i>	20.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Thelypteris palustris</i>	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	132	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

F16 upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F16 upland
 Investigator(s): DCR DMH Section, Township, Range:
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.67912 Long: -72.21014 Datum:
 Soil Map Unit: Colton gravelly loamy sand, 8 to 15 percent slopes NWI Class:
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions present
 Are Normal Circumstances present? no If needed, explain any answers in Remarks: Drought conditions present
 Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Remarks: Maintained ROW
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>no</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>no</u>	
Wetland Hydrology Present? <u>no</u>	
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>no</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary and only one secondary indicator of wetland hydrology present; parameter is not met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR_3/3	100		N/A	N/A	N/A	LOAM	
10-20	10YR_5/6	100		N/A	N/A	N/A	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>no</u>
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.	

VEGETATION - Use scientific names of plants.



Sampling Point: F16 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>7</u> (A) # Dominants across all strata: <u>8</u> (B) % Dominants OBL, FACW, FAC: <u>87.50%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>1</u> x 1 = <u>1</u> FACW <u>5</u> x 2 = <u>10</u> FAC <u>4</u> x 3 = <u>12</u> FACU <u>3</u> x 4 = <u>12</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>13</u> (A) <u>35</u> (B) Prevalence Index = B/A = <u>2.44</u>
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <i>Aronia melanocarpa</i>	20.5	X	FAC	
2. <i>Alnus incana</i>	10.5	X	FACW	
3. <i>Pinus strobus</i>	10.5	X	FACU	
4. <i>Frangula alnus</i>	10.5	X	FAC	
5. <i>Cornus amomum</i>	3		FACW	
6. _____				
7. _____				
8. _____				
	<u>55</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Osmunda spectabilis</i>	38	X	OBL	
2. <i>Onoclea sensibilis</i>	38	X	FACW	
3. <i>Doellingeria umbellata</i>	38	X	FACW	
4. <i>Solidago rugosa</i>	38	X	FAC	
5. <i>Brachyelytrum erectum</i>	20.5		FACU	
6. <i>Eutrochium fistulosum</i>	10.5		FACW	
7. <i>Pteridium aquilinum</i>	10.5		FACU	
8. <i>Symphytichum lateriflorum</i>	10.5		FAC	
9. _____				
10. _____				
11. _____				
12. _____				
	<u>204</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>no</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

F16

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F16
 Investigator(s): DCR DMH Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.67902 Long: -72.20995 Datum: _____
 Soil Map Unit: Colton gravelly loamy sand, 8 to 15 percent slopes NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>14</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-8	10YR_3/2	97	7.5YR_4/4	3	C	M,PL	GRAVELLY_LOAM
8-16	2.5Y_4/3	95	10YR_3/6	5	C	M	GRAVELLY_LOAM
							Refusal at 16

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>Yes</u>	
Depth (inches): <u>16</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: F16

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 7 (A)
2. _____				# Dominants across all strata: 8 (B)
3. _____				% Dominants OBL, FACW, FAC: 87.50% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 2 x 1 = 2
3. _____				FACW 3 x 2 = 6
4. _____				FAC 4 x 3 = 12
5. _____				FACU 2 x 4 = 8
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 11 (A) 28 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 2.40
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Carpinus caroliniana	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	31	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Rubus hispidus	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Persicaria sagittata	20.5	X	OBL	
3. Brachyelytrum erectum	20.5	X	FACU	
4. Doellingeria umbellata	20.5	X	FACW	
5. Athyrium asplenoides	20.5	X	FAC	
6. Osmundastrum cinnamomeum	20.5	X	FACW	
7. Osmunda spectabilis	10.5		OBL	
8. Symphyotrichum lateriflorum	10.5		FAC	
9. Pteridium aquilinum	3		FACU	
10. _____				
11. _____				
12. _____				
	164	= Total Cover		Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
1. _____				Woody vine - All woody vines, regardless of height.
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W24

F14 upland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: F14 upland
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Ridge Local relief (concave, convex, none): Convex Slope (%): 3-5%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? no
Hydric Soil Present? no
Wetland Hydrology Present? no
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Field Observations: Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? no

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
0-10 10YR_3/3 100 N/A N/A N/A SANDY_LOAM Refusal at 10 inches
Hydric Soil Indicators:
Restrictive Layer (if observed): Type: Rock Depth (inches): 10
Hydric Soil Present? no

VEGETATION - Use scientific names of plants.



Sampling Point: F14 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>6</u> (A) # Dominants across all strata: <u>9</u> (B) % Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0</u> x 1 = <u>0</u> FACW <u>5</u> x 2 = <u>10</u> FAC <u>4</u> x 3 = <u>12</u> FACU <u>5</u> x 4 = <u>20</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>14</u> (A) <u>42</u> (B) Prevalence Index = B/A = <u>2.55</u>
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. Frangula alnus	38	X	FAC	
2. Alnus incana	20.5	X	FACW	
3. Acer rubrum	10.5		FAC	
4. Betula lenta	3		FACU	
5. Fraxinus americana	3		FACU	
6. _____				
7. _____				
8. _____				
<u>75</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. Solidago canadensis	38	X	FACU	
2. Solidago rugosa	20.5	X	FAC	
3. Doellingeria umbellata	10.5	X	FACW	
4. Rubus allegheniensis	10.5	X	FACU	
5. Gaultheria procumbens	10.5	X	FACU	
6. Dichanthelium clandestinum	10.5	X	FACW	
7. Osmunda claytoniana	10.5	X	FAC	
8. Thalictrum pubescens	3		FACW	
9. Eutrochium fistulosum	3		FACW	
10. _____				
11. _____				
12. _____				
<u>117</u> = Total Cover				
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>no</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

F14

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: F14
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.67845 Long: -72.20799 Datum:
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions present
Are Normal Circumstances present? no If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Remarks: Maintained ROW
Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? yes
Hydric Soil Present? yes
Wetland Hydrology Present? yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) X Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-16 10YR_3/2 94 2.5YR_3/6 6 C M,PL SANDY_CLAY_LOAM Refusal at 16
1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Rock
Depth (inches): 16
Hydric Soil Present? yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: F14

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>8</u> (A) # Dominants across all strata: <u>8</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>2</u> x 1 = <u>2</u> FACW <u>7</u> x 2 = <u>14</u> FAC <u>2</u> x 3 = <u>6</u> FACU <u>1</u> x 4 = <u>4</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>12</u> (A) <u>26</u> (B) Prevalence Index = B/A = <u>2.47</u>	
Sapling Stratum (Plot size: 30 ft) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____					
	<u>0</u>	= Total Cover			
Shrub Stratum (Plot size: 15 ft) 1. <i>Spiraea alba</i> 38 X FACW 2. <i>Lyonia ligustrina</i> 20.5 X FACW 3. <i>Frangula alnus</i> 10.5 FAC 4. <i>Acer rubrum</i> 10.5 FAC 5. _____ 6. _____ 7. _____ 8. _____					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
	<u>79</u>	= Total Cover			
Herb Stratum (Plot size: 5 ft) 1. <i>Carex folliculata</i> 20.5 X OBL 2. <i>Thelypteris palustris</i> 20.5 X FACW 3. <i>Calamagrostis canadensis</i> 10.5 X OBL 4. <i>Rubus hispidus</i> 10.5 X FACW 5. <i>Dichantherium clandestinum</i> 10.5 X FACW 6. <i>Doellingeria umbellata</i> 10.5 X FACW 7. <i>Solidago canadensis</i> 3 FACU 8. <i>Onoclea sensibilis</i> 3 FACW 9. _____ 10. _____ 11. _____ 12. _____					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
	<u>89</u>	= Total Cover			
Woody Vines (Plot size: 30 ft) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____					Hydrophytic Vegetation Present? <u>yes</u>
	<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-46-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-46-UPL
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.67557 Long: -72.19871 Datum: WGS1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_2/1 100 N/A N/A N/A SILT_LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 2
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-46-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W26

G-46-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-46-WET
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%WGS
Subregion (LRR or MLRA): LRR R Lat: 42.67551 Long: -72.19848 Datum: 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Sphagnum throughout
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-24 10YR_2/1 100 N/A N/A N/A N/A MUCK
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histlic Epipedon (A2)
Black Histlic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-46-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
<u>0</u> = Total Cover				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>	
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. Ilex verticillata	20.5	X	FACW		
2. Spiraea alba	20.5	X	FACW		
3. Spiraea tomentosa	3		FACW		
4. Viburnum dentatum	3		FAC		
5. Decodon verticillatus	3		OBL		
6. _____					
7. _____					
8. _____					
<u>50</u> = Total Cover				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. Sparganium americanum	85.5	X	OBL		
2. Dulichium arundinaceum	63	X	OBL		
3. Thelypteris palustris	10.5		FACW		
4. Calamagrostis canadensis	3		OBL		
5. Scirpus cyperinus	3		OBL		
6. Lysimachia_SP	3		NULL		
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
<u>168</u> = Total Cover				Hydrophytic Vegetation Present? <u>Yes</u>	
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
<u>0</u> = Total Cover					

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present; parameter is met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-45-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-45-UPL
 Investigator(s): C Cyrus N Newbery Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.67417 Long: -72.19319 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR_3/4	80	10YR_2/1	10	N/A	N/A	SILT_LOAM	
16-18	7.5YR_5/8	100		N/A	N/A	N/A	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: G-45-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)				
1. <i>Kalmia latifolia</i>	98	X	FACU	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>98</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)				
1. <i>Gaultheria procumbens</i>	10.5	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Rubus hispidus</i>	10.5	X	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>21</u> = Total Cover				
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				Hydrophytic Vegetation Present? <u>No</u>

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-45-WET
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.67401 Long: -72.19275 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C5)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Sphagnum throughout
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/1 100 N/A N/A N/A MUCK 2 inches of organics
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-45-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 7 (A)
2. _____				# Dominants across all strata: 8 (B)
3. _____				% Dominants OBL, FACW, FAC: 87.50% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Kalmia latifolia</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Lyonia ligustrina</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Fraxinus pennsylvanica</i>	0		FACW	<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	29	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Thelypteris palustris</i>	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Carex lurida</i>	3	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Doellingeria umbellata</i>	3	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Onoclea sensibilis</i>	3	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Toxicodendron radicans</i>	3	X	FAC	Woody vine - All woody vines, regardless of height.
6. <i>Symphotrichum novae-angliae</i>	3	X	FACW	
7. <i>Lysimachia_SP</i>	3	X	NULL	
8. <i>Symplocarpus foetidus</i>	0		OBL	
9. _____				
10. _____				
11. _____				
12. _____				
	28	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-44-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-44-UPL
 Investigator(s): C Cyrus N Newberry Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.67368 Long: -72.19138 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_2/1	100		N/A	N/A	N/A	SILT_LOAM	
1-5	10YR_4/3	90	10YR_5/6	5	C	M	SILT_LOAM	
			10YR_2/1	5	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-44-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	38	X	FACU	_____ Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	10.5		FACW	_____ Prevalence Index is <= 3.0
3. <i>Kalmia angustifolia</i>	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Acer rubrum</i>	3		FAC	_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				
7. _____				
8. _____				
	54	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Maianthemum canadense</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Osmunda claytoniana</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Pteridium aquilinum</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	90	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-44-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-44-WET
 Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.67356 Long: -72.19147 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology Yes significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Wetland located in access road

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_2/1	100		N/A	N/A	N/A	MUCKY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input checked="" type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>Yes</u>	
Depth (inches): <u>5</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-44-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 6 (A)
2. _____				# Dominants across all strata: 7 (B)
3. _____				% Dominants OBL, FACW, FAC: 85.71% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	3	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea tomentosa</i>	3	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	9	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Carex radiata</i>	20.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Juncus effusus</i>	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Carex lurida</i>	10.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Glyceria canadensis</i>	10.5	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Scirpus cyperinus</i>	3		OBL	Woody vine - All woody vines, regardless of height.
6. <i>Carex scoparia</i>	3		FACW	
7. <i>Doellingeria umbellata</i>	3		FACW	
8. <i>Lysimachia terrestris</i>	3		OBL	
9. _____				
10. _____				
11. _____				
12. _____				
	64	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-43-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-42-UPL
 Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.67303 Long: -72.18913 Datum: WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
1-4	10YR_2/1	100		N/A	N/A	N/A	SILT_LOAM	
4-18	10YR_4/6	100		N/A	N/A	N/A	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>-</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-43-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%
1. <i>Kalmia latifolia</i>	63	X	FACU	_____ Prevalence Index is <= 3.0
2. <i>Kalmia angustifolia</i>	10.5		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Pinus strobus</i>	3		FACU	_____ Rapid Test for Hydrophytic Vegetation
4. <i>Acer rubrum</i>	3		FAC	_____ Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				Definitions of Vegetation Strata:
	79	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: 5 ft)				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
1. <i>Rubus hispidus</i>	38	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
2. <i>Gaultheria procumbens</i>	38	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. <i>Pteridium aquilinum</i>	10.5		FACU	Woody vine - All woody vines, regardless of height.
4. <i>Acer rubrum</i>	3		FAC	
5. <i>Cornus canadensis</i>	3		FAC	
6. <i>Lysimachia_SP</i>	3		NULL	
7. <i>Dendrolycopodium obscurum</i>	3		FACU	
8. <i>Brachyelytrum erectum</i>	3		FACU	
9. <i>Maianthemum canadense</i>	3		FACU	
10. _____				
11. _____				
12. _____				
	104	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W28

G-43-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-43-WET
 Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.67305 Long: -72.18944 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present? <u>Yes</u>	
Surface Water Present? _____	Depth (inches): <u>N/A</u>		
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? <u>X</u>	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Sphagnum present in wetland			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/1	100		N/A	N/A	N/A	SILT_LOAM	4 inches of organics
2-18	10YR_4/2	90	10YR_6/1	10	D	M	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present? <u>Yes -</u>	
Type: _____	Depth (inches): _____		
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: G-43-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Kalmia latifolia</i>	20.5	X	FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Acer rubrum</i>	20.5	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Kalmia angustifolia</i>	10.5		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Ilex verticillata</i>	10.5		FACW	<input type="checkbox"/> Morphological Adaptations
5. <i>Betula lenta</i>	3		FACU	
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	65	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Carex folliculata</i>	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Rubus hispidus</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Osmundastrum cinnamomeum</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Thelypteris palustris</i>	3		FACW	Woody vine - All woody vines, regardless of height.
5. <i>Cornus canadensis</i>	0		FAC	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	27	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-42-UPL
Investigator(s): C Cyrus, N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): Convex Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.67227 Long: -72.18672 Datum: WGS 1984
Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
1-16 10YR_4/1 90 10YR_3/3 10 C M SILT_LOAM
16-18 10YR_4/1 90 10YR_3/3 10 C M SANDY_LOAM
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Hydric Soil Present? Yes -
Depth (inches):
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-42-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Acer rubrum</i>	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Kalmia angustifolia</i>	20.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Pinus strobus</i>	0		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Betula cordifolia</i>	0		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Lyonia ligustrina</i>	0		FACW	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	41	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Dennstaedtia punctilobula</i>	3		UPL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dendrolycopodium obscurum</i>	0		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	34	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-42-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-42-WET
 Investigator(s): C Cyrus, N Newberry Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.67235 Long: -72.18681 Datum: WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought Conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology Yes significantly disturbed? Remarks: Large ditch runs through wetland ; powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Half-inch of water in ditch			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR_2/1	90	10YR_6/1	10	D	M	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:	_____	<u>Yes</u>	
Depth (inches):	_____		
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: G-42-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Frangula alnus</i>	38	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Lyonia ligustrina</i>	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	69	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Glyceria canadensis</i>	20.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Dennstaedtia punctilobula</i>	20.5	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Scirpus cyperinus</i>	20.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Rubus hispidus</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	64	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-41-UPL

Project Site: A1B1 City/County: Royalston / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-41-UPL
 Investigator(s): C Cyrus N Newberry Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.67185 Long: -72.18456 Datum: _____
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
1-2	10YR_2/1	100		N/A	N/A	N/A	SILT_LOAM	
2-18	10YR_6/1	95	10YR_6/4	5	C	M	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: G-41-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)					Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1.	<i>Kalmia angustifolia</i>	63	X	FAC	
2.	<i>Gaylussacia baccata</i>	38	X	FACU	
3.	<i>Kalmia latifolia</i>	3		FACU	
4.	<i>Lyonia ligustrina</i>	3		FACW	
5.	<i>Ilex verticillata</i>	3		FACW	
6.	<i>Quercus rubra</i>	3		FACU	
7.	<i>Pinus strobus</i>	0		FACU	
8.					
		113	= Total Cover		
Herb Stratum (Plot size: 5 ft)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Gaultheria procumbens</i>	63	X	FACU	
2.	<i>Pteridium aquilinum</i>	20.5	X	FACU	
3.	<i>Rubus hispidus</i>	3		FACW	
4.	<i>Maianthemum canadense</i>	3		FACU	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		89	= Total Cover		
Woody Vines (Plot size: 30 ft)					Hydrophytic Vegetation Present? <u>No</u>
1.					
2.					
3.					
4.					
5.					
		0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-41-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/2/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-41-WET
 Investigator(s): C Cyrus, N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.67138 Long: -72.18332 Datum: WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <u>Rained</u>	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_2/1	100		N/A	N/A	N/A	SILT_LOAM	
1-15	10YR_4/1	90	10YR_5/1	10	D	M	SILT_LOAM	
15-18	10YR_5/1	100		N/A	N/A	N/A	GRAVELLY_SANDY_LOAM	
							M	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input checked="" type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>Yes</u>
Remarks:		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-41-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input type="checkbox"/> X Dominance Test is > 50%
1. <i>Lyonia mariana</i>	20.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Kalmia latifolia</i>	10.5	X	FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Kalmia angustifolia</i>	10.5	X	FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Morphological Adaptations
5. <i>Quercus rubra</i>	0		FACU	
6. <i>Pinus strobus</i>	0		FACU	
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____				
	44	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Cornus canadensis</i>	38	X	FAC	
2. <i>Brachyelytrum erectum</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus hispidus</i>	20.5	X	FACW	
4. <i>Solidago rugosa</i>	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
5. <i>Thelypteris palustris</i>	3		FACW	
6. <i>Lysimachia terrestris</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. <i>Carex gracillima</i>	0		FACU	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	88	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		Hydrophytic Vegetation Present? Yes _____

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-41-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/2/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-41-UPL
Investigator(s): C Cyrus, N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.67145 Long: -72.18348 Datum: WGS 1984
Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
1-12 10YR_4/2 100 N/A N/A N/A SILT_LOAM
12-18 10YR_5/1 100 N/A N/A N/A SANDY_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-41-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 25.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Kalmia angustifolia</i>	10.5	X	FAC	_____ Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		
Herb Stratum (Plot size: _____)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	63	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Cornus canadensis</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Osmunda claytoniana</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Rubus hispidus</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Solidago rugosa</i>	3		FAC	
7. <i>Lysimachia_SP</i>	0		NULL	
8. <i>Nabalus autumnalis</i>	0		UPL	
9. _____				
10. _____				
11. _____				
12. _____				
	145	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-41-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-41-WET
 Investigator(s): C Cyrus, N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.67184 Long: -72.18477 Datum: WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
1-6	10YR_2/2	100		N/A	N/A	N/A	SILT_LOAM	
6-12	2.5Y_3/1	95	10YR_7/1	5	D	M	GRAVELLY_SILT_LOAM	
12-16	2.5Y_3/1	80	2.5Y_4/1	20	C	M	GRAVELLY_SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>Yes</u>	
Depth (inches): <u>16</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-41-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Ilex verticillata</i>	38	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. <i>Kalmia latifolia</i>	10.5		FACU	
3. <i>Spiraea alba</i>	10.5		FACW	
4. <i>Lyonia ligustrina</i>	10.5		FACW	
5. <i>Frangula alnus</i>	3		FAC	
6. <i>Alnus serrulata</i>	3		OBL	
7. _____				
8. _____				
	75	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Glyceria striata</i>	20.5	X	OBL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Osmunda cinnamomea</i>	10.5	X	FACW	
3. <i>Onoclea sensibilis</i>	10.5	X	FACW	
4. <i>Typha latifolia</i>	3		OBL	
5. <i>Impatiens capensis</i>	3		FACW	
6. <i>Solidago gigantea</i>	3		FACW	
7. <i>Glyceria canadensis</i>	3		OBL	
8. <i>Symphotrichum novae-angliae</i>	3		FACW	
9. <i>Carex scoparia</i>	3		FACW	
10. <i>Scirpus cyperinus</i>	3		OBL	
11. <i>Carex scoparia</i>	3		FACW	
12. <i>Persicaria pensylvanica</i>	3		FACW	
	68	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
Remarks: (If observed, list morphological adaptations below). Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.				
Hydrophytic Vegetation Present? <u>Yes</u>				



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-40-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/2/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-40-UPL
 Investigator(s): C Cyrus, N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.67131 Long: -72.18266 Datum: WGS 1984
 Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-8	10YR_4/2	70	10YR_6/1	10	RM	M	GRAVELLY_SILT_LOAM
			10R_4/6	10	C	M	
			10YR_2/1	10	C	M	
8-10	10YR_4/3	90	10YR_5/6	10	C	M	SILT_LOAM

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>10</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-40-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: 1 (A)
2. _____	_____	_____	_____	# Dominants across all strata: 3 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: Multiply By:
2. _____	_____	_____	_____	OBL _____ x 1 = _____
3. _____	_____	_____	_____	FACW _____ x 2 = _____
4. _____	_____	_____	_____	FAC _____ x 3 = _____
5. _____	_____	_____	_____	FACU _____ x 4 = _____
6. _____	_____	_____	_____	UPL _____ x 5 = _____
7. _____	_____	_____	_____	Sum: _____ (A) _____ (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	38	X	FACU	_____ Dominance Test is > 50%
2. <i>Kalmia angustifolia</i>	20.5	X	FAC	_____ Prevalence Index is <= 3.0
3. <i>Lyonia ligustrina</i>	3		FACW	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Ilex verticillata</i>	3		FACW	_____ Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	_____ Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	64	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pteridium aquilinum</i>	10.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus hispidus</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Gaylussacia baccata</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Cornus canadensis</i>	0		FAC	Woody vine - All woody vines, regardless of height.
6. <i>Dendrolycopodium obscurum</i>	0		FACU	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	87	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W32

G-40-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/2/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-40-WET
Investigator(s): C Cyrus, N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.67113 Long: -72.18250 Datum: WGS 1984
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary indicator or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_2/1 100 N/A N/A N/A SILT_LOAM
3-5 10YR_2/2 100 N/A N/A N/A GRAVELLY_SILT_LOAM
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 5
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-40-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 34.0 x 1 = 34.0
2. _____				FACW 9.0 x 2 = 18.0
3. _____				FAC 13.5 x 3 = 40.5
4. _____				FACU 10.5 x 4 = 42.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 67.0 (A) 134.5 (B)
7. _____				Prevalence Index = B/A = 2.01
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Symphyotrichum_SP</i>	85.5	X	NULL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Carex folliculata</i>	20.5		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Carex lurida</i>	10.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Equisetum arvense</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Juncus effusus</i>	3		OBL	Woody vine - All woody vines, regardless of height.
6. <i>Osmundastrum cinnamomeum</i>	3		FACW	
7. <i>Rubus hispidus</i>	3		FACW	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	128	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W33

G-39-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-39-UPL
Investigator(s): C Cyrus, N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): Flat Slope (%): <1%
Subregion (LRR or MLRA): LRR R Lat: 42.66848 Long: -72.17470 Datum: WGS 1984
Soil Map Unit: Adams loamy sand, 3 to 8 percent slopes, wooded NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_3/4 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? No
Depth (inches): 4
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-39-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <i>Frangula alnus</i>	38	X	FAC	
2. <i>Alnus serrulata</i>	20.5	X	OBL	
3. <i>Lyonia ligustrina</i>	3		FACW	
4. <i>Spiraea alba</i>	3		FACW	
5. _____				
6. _____				
7. _____				
8. _____				
	64	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Poa annua</i>	63	X	FACU	
2. <i>Andropogon virginicus</i>	38	X	FACU	
3. <i>Rudbeckia hirta</i>	10.5		FACU	
4. <i>Solidago altissima</i>	3		FACU	
5. <i>Euthamia graminifolia</i>	3		FAC	
6. <i>Potentilla indica</i>	3		FACU	
7. <i>Achillea millefolium</i>	3		FACU	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	123	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-39-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-39-WET
 Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR R Lat: 42.66848 Long: -72.17485 Datum: WGS 1984
 Soil Map Unit: Adams loamy sand, 3 to 8 percent slopes, wooded NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? _____	
Remarks: _____	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) _____ <input type="checkbox"/> High Water Table (A2) _____ <input checked="" type="checkbox"/> Saturation (A3) _____ <input type="checkbox"/> Water Marks (B1) _____ <input type="checkbox"/> Sediment Deposits (B2) _____ <input type="checkbox"/> Drift Deposits (B3) _____ <input type="checkbox"/> Algal Mat or Crust (B4) _____ <input type="checkbox"/> Iron Deposits (B5) _____ <input type="checkbox"/> Inundation Visible on Aerial (B7) _____ <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) _____ <input type="checkbox"/> Water-Stained Leaves (B9) _____ <input type="checkbox"/> Aquatic Fauna (B13) _____ <input type="checkbox"/> Marl Deposits (B15) _____ <input type="checkbox"/> Hydrogen Sulfide Odor (C1) _____ <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) _____ <input type="checkbox"/> Presence of Reduced Iron (C4) _____ <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) _____ <input type="checkbox"/> Thin Muck Surface (C7) _____ <input type="checkbox"/> Other (Explain in Remarks) _____	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) _____ <input type="checkbox"/> Drainage Patterns (B10) _____ <input type="checkbox"/> Moss Trim Lines (B16) _____ <input type="checkbox"/> Dry-Season Water Table (C2) _____ <input type="checkbox"/> Crayfish Burrows (C8) _____ <input type="checkbox"/> Saturation Visible on Aerial (C9) _____ <input type="checkbox"/> Stunted or Stressed Plants (D1) _____ <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ <input type="checkbox"/> Shallow Aquitard (D3) _____ <input type="checkbox"/> Microtopographic Relief (D4) _____ <input type="checkbox"/> FAC-Neutral Test (D5) _____
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: _____	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-30	10YR_2/1	100		N/A	N/A	N/A	MUCKY MINERAL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) _____ <input type="checkbox"/> Histic Epipedon (A2) _____ <input type="checkbox"/> Black Histic (A3) _____ <input type="checkbox"/> Hydrogen Sulfide (A4) _____ <input type="checkbox"/> Stratified Layers (A5) _____ <input type="checkbox"/> Depleted Below Dark Surface (A11) _____ <input type="checkbox"/> Thick Dark Surface (A12) _____ <input type="checkbox"/> Sandy Mucky Mineral (S1) _____ <input type="checkbox"/> Sandy Gleyed Matrix (S4) _____ <input type="checkbox"/> Sandy Redox (S5) _____ <input type="checkbox"/> Stripped Matrix (S6) _____ <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) _____ <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) _____ <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) _____ <input checked="" type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) _____ <input type="checkbox"/> Loamy Gleyed Matrix (F2) _____ <input type="checkbox"/> Depleted Matrix (F3) _____ <input type="checkbox"/> Redox Dark Surface (F6) _____ <input type="checkbox"/> Depleted Dark Surface (F7) _____ <input type="checkbox"/> Redox Depressions (F8) _____	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) _____ <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) _____ <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) _____ <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) _____ <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) _____ <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) _____ <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) _____ <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) _____ <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) _____ <input type="checkbox"/> Red Parent Material (F21) _____ <input type="checkbox"/> Very Shallow Dark Surface (TF12) _____ <input type="checkbox"/> Other (Explain in Remarks) _____
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>30</u>	Hydric Soil Present? <u>Yes</u>
Remarks: <u>Soils meet F1 hydric soil indicator; however, F1 is not approved for use in LRR R</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-39-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 1 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Scirpus cyperinus</i>	85.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Leersia oryzoides</i>	10.5		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Bidens aristosa</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Persicaria hydropiperoides</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Eutrochium maculatum</i>	3		OBL	Woody vine - All woody vines, regardless of height.
6. <i>Eupatorium perfoliatum</i>	0		FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	112	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-38-UPL

Project Site: A1B2 City/County: Royalston / Worcester State: MA Samp. Date: 9/1/2020
 Applicant/Owner: National Grid Section, Township, Range: N/A Sampling Point: G-38-UPL
 Investigator(s): C Cyrus, N Newberry Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.66811 Long: -72.17349 Datum: WGS 1984
 Soil Map Unit: Adams loamy sand, 3 to 8 percent slopes, wooded NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/4	100		N/A	N/A	N/A	FINE SANDY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>6</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-38-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	63	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	63	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Gaylussacia baccata</i>	10.5		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	139	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Andropogon virginicus</i>	10.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Danthonia sericea</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Rubus hispidus</i>	3		FACW	
6. <i>Solidago caesia</i>	0		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	97	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W34

G-38-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-38-WET
Investigator(s): C Cyrus, N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%WGS
Subregion (LRR or MLRA): LRR R Lat: 42.66808 Long: -72.17339 Datum: 1984
Soil Map Unit: Adams loamy sand, 3 to 8 percent slopes, wooded NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: Drought conditions
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: Drought conditions
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C5)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Sphagnum in wetland
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-8 10YR_2/1 100 N/A N/A N/A MUCKY_LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
X Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 8
Hydric Soil Present? Yes
Remarks: Soils meet F1 indicator; however F1 is not approved for use in LRR R

VEGETATION - Use scientific names of plants.



Sampling Point: G-38-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Alnus serrulata	20.5	X	OBL	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Ilex verticillata	20.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Spiraea alba	10.5		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	72	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Osmunda cinnamomea	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Glyceria canadensis	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Viola sororia	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Lycopodium americanus	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Arisaema triphyllum	0		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	37	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-37-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-37-UPL
 Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.66744 Long: -72.17112 Datum: WGS 1984
 Soil Map Unit: Croghan loamy fine sand, 3 to 8 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/2	100		N/A	N/A	N/A	SILT_LOAM	
2-17	10YR_3/2	50	10YR_5/1	50	N/A	N/A		Mixed matrix
17-18	10YR_5/8	100		N/A	N/A	N/A	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-37-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	63	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Viburnum nudum</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	101	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	85.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	116	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-37-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-37-WET
 Investigator(s): C Cyrus, N Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.66736 Long: -72.17094 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Did not apply geomorphic position due to position on hillslope.			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_2/1	100		N/A	N/A	N/A	MUCKY MINERAL	2 inches of organics on top
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators:					Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)				
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)				
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)				
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)				
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)				
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)				
<input type="checkbox"/> Stripped Matrix (S6)				<input checked="" type="checkbox"/> Very Shallow Dark Surface (TF12)				
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)				
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed):					Hydric Soil Present?			
Type:	<u>Bedrock</u>				<u>Yes</u>			
Depth (inches):	<u>4</u>							
Remarks:								

VEGETATION - Use scientific names of plants.



Sampling Point: G-37-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Ilex verticillata</i>	63	X	FACW	
2. <i>Lyonia ligustrina</i>	38	X	FACW	
3. <i>Spiraea alba</i>	10.5		FACW	
4. <i>Acer rubrum</i>	0		FAC	
5. <i>Betula lenta</i>	0		FACU	
6. _____				
7. _____				
8. _____				
	111	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Thelypteris palustris</i>	10.5	X	FACW	
2. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	
3. <i>Rubus hispidus</i>	10.5	X	FACW	
4. <i>Lysimachia</i> SP	3		NULL	
5. <i>Scirpus cyperinus</i>	3		OBL	
6. <i>Juncus effusus</i>	3		OBL	
7. <i>Lycopus americanus</i>	3		OBL	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	43	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 5 (A)

Dominants across all strata: 5 (B)

% Dominants OBL, FACW, FAC: 100.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of: Multiply By:

OBL x 1 =

FACW x 2 =

FAC x 3 =

FACU x 4 =

UPL x 5 =

Sum: (A) (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W36

G-36-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-36-UPL
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.66625 Long: -72.16710 Datum: WGS 1984
Soil Map Unit: Skerry fine sandy loam, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-8 10YR_4/3 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? -
Depth (inches): 8
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-36-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____	_____	_____	_____	# Dominants across all strata: <u>3</u> (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: <u> </u> Multiply By: <u> </u>
2. _____	_____	_____	_____	OBL <u> </u> x 1 = <u> </u>
3. _____	_____	_____	_____	FACW <u> </u> x 2 = <u> </u>
4. _____	_____	_____	_____	FAC <u> </u> x 3 = <u> </u>
5. _____	_____	_____	_____	FACU <u> </u> x 4 = <u> </u>
6. _____	_____	_____	_____	UPL <u> </u> x 5 = <u> </u>
7. _____	_____	_____	_____	Sum: <u> </u> (A) <u> </u> (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = <u> </u>
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Juniperus communis</i>	63	X	FACU	<u> </u> Dominance Test is > 50%
2. <i>Kalmia angustifolia</i>	20.5		FAC	<u> </u> Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	10.5		FAC	<u> </u> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Kalmia latifolia</i>	10.5		FACU	<u> </u> Rapid Test for Hydrophytic Vegetation
5. <i>Betula cordifolia</i>	3		FACU	<u> </u> Morphological Adaptations
6. <i>Lyonia ligustrina</i>	3		FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <i>Ilex verticillata</i>	3		FACW	
8. <i>Quercus rubra</i>	3		FACU	
	119	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dendrolycopodium obscurum</i>	0		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Maianthemum canadense</i>	0		FACU	Woody vine - All woody vines, regardless of height.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	86	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u> </u> No
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W36

G-36-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-36-WET
Investigator(s): C Cyrus N Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.66617 Long: -72.16689 Datum: WGS 1984
Soil Map Unit: Skerry fine sandy loam, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation Yes, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C5)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Sphagnum present throughout wetland. Access road alters hydro in the middle of the wetland.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_2/1 100 N/A N/A N/A MUCKY MINERAL
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 4
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-36-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 83.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Alnus serrulata</i>	3		OBL	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Betula cordifolia</i>	3		FACU	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	57	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Typha latifolia</i>	10.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Euthamia graminifolia</i>	10.5	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago rugosa</i>	3		FAC	
6. <i>Scirpus cyperinus</i>	3		OBL	
7. <i>Doellingeria umbellata</i>	3		FACW	
8. <i>Thelypteris palustris</i>	3		FACW	
9. <i>Solidago gigantea</i>	3		FACW	
10. <i>Eutrochium maculatum</i>	0		OBL	
11. _____				
12. _____				
	84	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. <i>Clematis terniflora</i>	3		UPL	
2. _____				
3. _____				
4. _____				
5. _____				
	3	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W37

F-13-UPL

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: F-13-UPL
Applicant/Owner: National Grid
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.66511 Long: -72.16347 Datum: WGS 1984
Soil Map Unit: NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not classified as a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-18 10YR_3/2 60 10YR_3/6 40 C M LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: F-13-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. Juniperus communis	38	X	FACU	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Acer rubrum	10.5		FAC	
3. Lyonia ligustrina	10.5		FACW	
4. Spiraea alba	3		FACW	
5. Kalmia angustifolia	3		FAC	
6. _____				
7. _____				
8. _____				
<u>65</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. Rubus hispidus	38	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. Gaultheria procumbens	10.5	X	FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>48</u> = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				

Remarks: (If observed, list morphological adaptations below).

No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

F-13-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F-13-WET
 Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.66501 Long: -72.16347 Datum: WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_2/1	95	10YR_3/3	5	C	M	LOAM	Augar refusal 4 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>4</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: F-13-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <i>Lyonia ligustrina</i>	38	X	FACW	
2. <i>Juniperus communis</i>	10.5		FACU	
3. <i>Kalmia angustifolia</i>	10.5		FAC	
4. <i>Acer rubrum</i>	3		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
	<u>62</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Rubus hispidus</i>	38	X	FACW	
2. <i>Dryopteris intermedia</i>	3		FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>41</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) is present with >50% of dominant species across all strata FAC or wetter. Parameter is met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W38

200903WFF12 upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: 200903WFF12 upland
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): Lat: 42.66293 Long: -72.15854 Datum:
Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions present
Are Normal Circumstances present? no If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Remarks: Maintained ROW
Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? no
Hydric Soil Present? no
Wetland Hydrology Present? no
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? no
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show data for depths 0-2, 2-4, 4-18, and 18-20 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Red Parent Material (F21) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Very Shallow Dark Surface (TF12)
Stripped Matrix (S6) Other (Explain in Remarks)
Dark Surface (S7) (LRR R, MLRA 149B)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? no
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: 200903WFF12 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 60.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 3 x 2 = 6
4. _____				FAC 5 x 3 = 15
5. _____				FACU 3 x 4 = 12
6. _____				UPL 1 x 5 = 5
7. _____				Sum: 12 (A) 38 (B)
8. _____				Prevalence Index = B/A = 2.48
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula caroliniana	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Kalmia angustifolia	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Lyonia ligustrina	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Ilex verticillata	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. Acer rubrum	3		FAC	<input type="checkbox"/> Morphological Adaptations
6. Vaccinium corymbosum	3		FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	50	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Pteridium aquilinum	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus flagellaris	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Cornus canadensis	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Solidago rugosa	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Dennstaedtia punctilobula	10.5		UPL	Woody vine - All woody vines, regardless of height.
6. Quercus rubra	3		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	75	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? no
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W38

200903WFF12 wetland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: 200903WFF12 wetland
Applicant/Owner: National Grid
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Undulating Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.66292 Long: -72.15830 Datum:
Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions present
Are Normal Circumstances present? no If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Remarks: Maintained ROW
Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? yes
Hydric Soil Present? yes
Wetland Hydrology Present? yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) X Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? yes
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_2/1 100 N/A N/A N/A N/A SILT_LOAM
4-10 10YR_3/2 60 10YR_5/1 25 D M
7.5YR_4/6 5 C M,PL
10-12 10YR_4/3 100 N/A N/A N/A SAND Refusal at 12
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) X Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) X Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) 3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Rock Hydric Soil Present? yes
Depth (inches): 12
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: 200903WFF12 wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 1 x 1 = 1
3. _____				FACW 5 x 2 = 10
4. _____				FAC 2 x 3 = 6
5. _____				FACU 1 x 4 = 4
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 9 (A) 21 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 1.84
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Lyonia ligustrina	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Spiraea alba	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Acer rubrum	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	34	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Calamagrostis canadensis	63	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Onoclea sensibilis	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Rubus hispidus	20.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Doellingeria umbellata	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Rubus flagellaris	10.5		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	142	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E2-upland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: E2-upland
Applicant/Owner: National Grid
Investigator(s): J. Peterson & M. Murphy
Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.66137 Long: -72.15842 Datum: GCS WGS 1984
Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Remarks: Dry year
Are Normal Circumstances present? yes If needed, explain any answers in Remarks:
Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? yes
Hydric Soil Present? no
Wetland Hydrology Present? no
Is This Sample Area Within a Wetland? no
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? no
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show data for depths 0-2 and 2-15 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 15
Hydric Soil Present? no
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E2-upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>38.0</u> x 2 = <u>76.0</u>
3. _____				FAC <u>13.5</u> x 3 = <u>40.5</u>
4. _____				FACU <u>10.5</u> x 4 = <u>42.0</u>
5. _____				UPL <u>63.0</u> x 5 = <u>315.0</u>
6. _____				Sum: <u>125.0</u> (A) <u>473.5</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.79</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <u>Rubus allegheniensis</u>	<u>10.5</u>	<u>X</u>	<u>FACU</u>	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <u>Frangula alnus</u>	<u>10.5</u>	<u>X</u>	<u>FAC</u>	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>21</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Dennstaedtia punctilobula</u>	<u>63</u>	<u>X</u>	<u>UPL</u>	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <u>Dichanthelium clandestinum</u>	<u>38</u>	<u>X</u>	<u>FACW</u>	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <u>Solidago rugosa</u>	<u>3</u>		<u>FAC</u>	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>104</u>	= Total Cover		Hydrophytic Vegetation Present? <u>yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E2-wetland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E2-wetland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.66134 Long: -72.15846 Datum: GCS WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? yes If needed, explain any answers in Remarks: _____
 Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>yes</u>	Is This Sample Area Within a Wetland?	<u>yes</u>
Hydric Soil Present?	<u>yes</u>		
Wetland Hydrology Present?	<u>yes</u>		
Remarks: Other _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>yes</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: <u>Profile moist but not saturated as evidenced by lack of glistening ped faces and absence of an existing water table.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 2/2	100		N/A	N/A	N/A	LOAMY FINE SAND	
4-7	7.5YR 4/3	40	10YR 3/1	60	D	M	SANDY LOAM	
7-15	10YR 4/2	100	10YR 4/3	20	C	M	SANDY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>yes</u>	
Remarks: Other _____			

VEGETATION - Use scientific names of plants.



Sampling Point: E2-wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 21.0 x 1 = 21.0
2. _____				FACW 89.5 x 2 = 179.0
3. _____				FAC 41.0 x 3 = 123.0
4. _____				FACU 0.0 x 4 = 0.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 151.5 (A) 323.0 (B)
7. _____				Prevalence Index = B/A = 2.13
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Spiraea alba	3		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Frangula alnus	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	16	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Onoclea sensibilis	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Euthamia graminifolia	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Spiraea alba	38	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Carex crinita	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Juncus effusus	10.5		OBL	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	135	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E3-upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E3-upland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Convex Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR Lat: 42.66077 Long: -72.15937 Datum: GCS WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? yes If needed, explain any answers in Remarks: _____
 Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>yes</u>	Is This Sample Area Within a Wetland?	<u>no</u>
Hydric Soil Present?	<u>no</u>		
Wetland Hydrology Present?	<u>no</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>	Wetland Hydrology Present?	<u>no</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Saturation Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 3/1	100		N/A	N/A	N/A	FINE SANDY LOAM	
1-2	7.5YR 4/4	100		N/A	N/A	N/A	FINE SANDY LOAM	
2-4	7.5YR 4/6	100		N/A	N/A	N/A	FINE SANDY LOAM	
4-14	10YR 4/6	100		N/A	N/A	N/A	FINE SANDY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	<input type="checkbox"/> Other (Explain in Remarks)	

Restrictive Layer (if observed):	Hydric Soil Present?	<u>no</u>
Type: _____ Depth (inches): _____		
Remarks:		

VEGETATION - Use scientific names of plants.



Sampling Point: E3-upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>41.5</u> x 2 = <u>83.0</u>
3. _____				FAC <u>31.0</u> x 3 = <u>93.0</u>
4. _____				FACU <u>38.0</u> x 4 = <u>152.0</u>
5. _____				UPL <u>38.0</u> x 5 = <u>190.0</u>
6. _____				Sum: <u>148.5</u> (A) <u>518.0</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.49</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	38	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Acer rubrum	10.5		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Lyonia ligustrina	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Viburnum nudum	10.5		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>69</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Dennstaedia punctilobula	38	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Cornus canadensis	20.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Rubus hispidus	20.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>79</u>	= Total Cover		Hydrophytic Vegetation Present? <u>yes</u>
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (If observed, list morphological adaptations below). Other
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E3-wetland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E3-wetland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.66079 Long: -72.15937 Datum: GCS WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall
 Are Normal Circumstances present? yes If needed, explain any answers in Remarks: _____
 Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>yes</u>	Is This Sample Area Within a Wetland?	<u>yes</u>
Hydric Soil Present?	<u>yes</u>		
Wetland Hydrology Present?	<u>yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>yes</u>	
Water Table Present?	Depth (inches): <u>2</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 2/1	100		N/A	N/A	N/A	MUCK	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>yes</u>	
Depth (inches): _____			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E3-wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 99.5 x 2 = 199.0
4. _____				FAC 0.0 x 3 = 0.0
5. _____				FACU 0.0 x 4 = 0.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 99.5 (A) 199.0 (B)
8. _____				Prevalence Index = B/A = 2.00
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Viburnum nudum</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	38	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	76	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Eutrochium fistulosum</i>	3		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	23	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Other



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E4-upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E4-upland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.65996 Long: -72.16029 Datum: GCS WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? yes If needed, explain any answers in Remarks: _____
 Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>no</u>	Is This Sample Area Within a Wetland?	<u>no</u>
Hydric Soil Present?	<u>no</u>		
Wetland Hydrology Present?	<u>no</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>no</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 3/2	100		N/A	N/A	N/A	FINE SANDY LOAM	
1-11		100		N/A	N/A	N/A	FINE SANDY LOAM	
11-14	10YR 5/6	100		N/A	N/A	N/A	FINE SANDY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Rock</u>		Hydric Soil Present?	<u>no</u>
Depth (inches): <u>14</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E4 & E5-upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <i>Pinus strobus</i>	10.5	X	FACU	# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. <i>Tsuga canadensis</i>	10.5	X	FACU	# Dominants across all strata: <u>5</u> (B)
3. <i>Acer rubrum</i>	3		FAC	% Dominants OBL, FACW, FAC: <u>40.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>24</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>31.0</u> x 2 = <u>62.0</u>
3. _____				FAC <u>13.5</u> x 3 = <u>40.5</u>
4. _____				FACU <u>31.5</u> x 4 = <u>126.0</u>
5. _____				UPL <u>20.5</u> x 5 = <u>102.5</u>
6. _____				Sum: <u>96.5</u> (A) <u>331.0</u> (B)
7. _____				Prevalence Index = B/A = <u>3.43</u>
8. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input type="checkbox"/> Dominance Test is > 50%
1. <i>Vaccinium corymbosum</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>10</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Dennstaedtia punctilobula</i>	20.5	X	UPL	
2. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Parathelypteris noveboracensis</i>	10.5		FAC	
4. <i>Pteridium aquilinum</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
5. _____				
6. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>62</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>no</u>

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W57

E4 wetland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: E4 Wetland
Applicant/Owner: National Grid
Investigator(s): J. Peterson & M. Murphy
Landform: Depression Local relief: Concave Slope (%): 3-5%
Subregion: LRR Lat: 42.66002 Long: -72.16020 Datum: GCS WGS 1984
Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: PSS
Remarks: Lower than usual rainfall.

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? yes
Hydric Soil Present? yes
Wetland Hydrology Present? yes
Is This Sample Area Within a Wetland? yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) High Water Table (A2) X Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial (B7) Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C5) Thin Muck Surface (C7) Other (Explain in Remarks)
Surface Soil Cracks (B6) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial (C9) Stunted or Stressed Plants (D1) X Geomorphic Position (D2) Shallow Aquitard (D3) X Microtopographic Relief (D4) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): 10
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix, Redox Features, Type, Loc, Texture, Remarks

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Thin Dark Surface (S9) (LRR R, MLRA 149B) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Depleted Matrix (F3) X Redox Dark Surface (F6) Depleted Dark Surface (F7) Redox Depressions (F8)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Dark Surface (S7) (LRR K, L, M) Polyvalue Below Surface (S8) (LRR K, L) Thin Dark Surface (S9) (LRR K, L) Iron-Manganese Masses (F12) (LRR K, L, R) Piedmont Floodplain Soils (F19) (MLRA 149B) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Red Parent Material (F21) Very Shallow Dark Surface (TF12) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Stony
Depth (inches): 10
Hydric Soil Present? yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E4 & E5-wetland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				
1. <i>Tsuga canadensis</i>	38	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>60.00%</u> (A/B)
2. <i>Betula alleghaniensis</i>	10.5		FAC	
3. <i>Acer rubrum</i>	10.5		FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>59</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. _____				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>51.5</u> x 2 = <u>103.0</u> FAC <u>55.0</u> x 3 = <u>165.0</u> FACU <u>58.5</u> x 4 = <u>234.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>165.0</u> (A) <u>502.0</u> (B) Prevalence Index = B/A = <u>3.04</u>
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Vaccinium corymbosum</i>	20.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Kalmia latifolia</i>	20.5	X	FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>41</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Parathelypteris noveboracensis</i>	20.5	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Rubus hispidus</i>	20.5	X	FACW	
3. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	
4. <i>Kalmia angustifolia</i>	10.5		FAC	
5. <i>Cornus canadensis</i>	3		FAC	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>65</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				Hydrophytic Vegetation Present? <u>yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E5-upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E5-upland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.65996 Long: -72.16029 Datum: GCS WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? yes If needed, explain any answers in Remarks: _____
 Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>no</u>	Is This Sample Area Within a Wetland?	<u>no</u>
Hydric Soil Present?	<u>no</u>		
Wetland Hydrology Present?	<u>no</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>	Wetland Hydrology Present?	<u>no</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Saturation Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 3/2	100		N/A	N/A	N/A	FINE SANDY LOAM	
1-11		100		N/A	N/A	N/A	FINE SANDY LOAM	
11-14	10YR 5/6	100		N/A	N/A	N/A	FINE SANDY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			

Restrictive Layer (if observed):	Hydric Soil Present?	<u>no</u>
Type: <u>Rock</u>		
Depth (inches): <u>14</u>		
Remarks:		

VEGETATION - Use scientific names of plants.



Sampling Point: E4 & E5-upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <u>Pinus strobus</u>	10.5	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>40.00%</u> (A/B)
2. <u>Tsuga canadensis</u>	10.5	X	FACU	
3. <u>Acer rubrum</u>	3		FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	24	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)				
1. _____				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>31.0</u> x 2 = <u>62.0</u> FAC <u>13.5</u> x 3 = <u>40.5</u> FACU <u>31.5</u> x 4 = <u>126.0</u> UPL <u>20.5</u> x 5 = <u>102.5</u> Sum: <u>96.5</u> (A) <u>331.0</u> (B) Prevalence Index = B/A = <u>3.43</u>
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u>Vaccinium corymbosum</u>	10.5	X	FACW	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	10	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u>Dennstaedtia punctilobula</u>	20.5	X	UPL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <u>Rubus hispidus</u>	20.5	X	FACW	
3. <u>Parathelypteris noveboracensis</u>	10.5		FAC	
4. <u>Pteridium aquilinum</u>	10.5		FACU	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	62	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				Hydrophytic Vegetation Present? <u>no</u>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W57

E5-wetland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: E5-wetland
Applicant/Owner: National Grid
Investigator(s): J. Peterson & M. Murphy
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.66002 Long: -72.16020 Datum: GCS WGS 1984
Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall.
Are Normal Circumstances present? yes If needed, explain any answers in Remarks:
Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? yes
Hydric Soil Present? yes
Wetland Hydrology Present? yes
Is This Sample Area Within a Wetland? yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): 10
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show soil profiles at depths 0-1, 1-3, 3-6, and 6-10 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Stony
Depth (inches): 10
Hydric Soil Present? yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E4 & E5-wetland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <i>Tsuga canadensis</i>	38	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>60.00%</u> (A/B)
2. <i>Betula alleghaniensis</i>	10.5		FAC	
3. <i>Acer rubrum</i>	10.5		FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>59</u>	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)				
1. _____				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>51.5</u> x 2 = <u>103.0</u> FAC <u>55.0</u> x 3 = <u>165.0</u> FACU <u>58.5</u> x 4 = <u>234.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>165.0</u> (A) <u>502.0</u> (B) Prevalence Index = B/A = <u>3.04</u>
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <i>Vaccinium corymbosum</i>	20.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Kalmia latifolia</i>	20.5	X	FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>41</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <i>Parathelypteris noveboracensis</i>	20.5	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Rubus hispidus</i>	20.5	X	FACW	
3. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	
4. <i>Kalmia angustifolia</i>	10.5		FAC	
5. <i>Cornus canadensis</i>	3		FAC	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>65</u>	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				Hydrophytic Vegetation Present? <u>yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E6-upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
Applicant/Owner: National Grid State: MA Sampling Point: E6-upland
Investigator(s): J. Peterson & M. Murphy Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%
Subregion (LRR or MLRA): LRR Lat: 42.65701 Long: -72.16499 Datum: GCS WGS 1984
Soil Map Unit: Berkshire-Marlow association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall.
Are Normal Circumstances present? yes If needed, explain any answers in Remarks:
Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? yes
Hydric Soil Present? no
Wetland Hydrology Present? no
Is This Sample Area Within a Wetland? no
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? no
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Color (moist), %, Type, Loc, Texture, Remarks. Rows show data for depths 0-4, 4-12, and 12-1t.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? no
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E6-upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 21.0 x 2 = 42.0
4. _____				FAC 21.0 x 3 = 63.0
5. _____				FACU 38.0 x 4 = 152.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 80.0 (A) 257.0 (B)
8. _____				Prevalence Index = B/A = 3.21
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Acer rubrum</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	21	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Solidago rugosa</i>	10.5		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Symphotrichum lanceolatum</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	59	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E6-wetland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E6-wetland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR Lat: 42.65694 Long: -72.16516 Datum: GCS WGS 1984
 Soil Map Unit: Berkshire-Marlow association NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? yes If needed, explain any answers in Remarks: _____
 Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>yes</u>	Is This Sample Area Within a Wetland?	<u>yes</u>
Hydric Soil Present?	<u>yes</u>		
Wetland Hydrology Present?	<u>yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	<u>yes</u>
Surface Water Present?	Depth (inches): <u>N/A</u>		
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-1	10YR 2/1	100		N/A	N/A	N/A	FINE SANDY LOAM
1-14	10YR 2/2	85	10YR 4/2	10	D	M	
			10YR 4/4	5	C	M	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input checked="" type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input checked="" type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>yes</u>
Type:	_____		
Depth (inches):	_____		
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: E6-wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 10.5 x 1 = 10.5
3. _____				FACW 79.0 x 2 = 158.0
4. _____				FAC 0.0 x 3 = 0.0
5. _____				FACU 0.0 x 4 = 0.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 89.5 (A) 168.5 (B)
8. _____				Prevalence Index = B/A = 1.88
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Phalaris arundinacea	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Onoclea sensibilis	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Symphytrichum lanceolatum	20.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Lysimachia terrestris	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	89	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E7-upl

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: E7-upl
Applicant/Owner: J. Peterson, M. Murphy Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): Lat: -0.56539 Long: 144.95986 Datum: GCS WGS 1984
Soil Map Unit: NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Row

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show data for depths 0-1, 1-9, 9-10, and 10-18 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E7-upl

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL 0.0 x 1 = 0.0
2. _____				FACW 0.0 x 2 = 0.0
3. _____				FAC 21.0 x 3 = 63.0
4. _____				FACU 73.5 x 4 = 294.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 94.5 (A) 357.0 (B)
7. _____				Prevalence Index = B/A = 3.78
8. _____				
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Betula populifolia</i>	10.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	10	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Solidago puberula</i>	63	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Dendrolycopodium obscurum</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Kalmia angustifolia</i>	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	84	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E7-wet

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
Applicant/Owner: National Grid State: MA Sampling Point: E7-wet
Investigator(s): J. Peterson & M. Murphy Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: -0.59591 Long: 144.96767 Datum: GCS WGS 1984
Soil Map Unit: Crogan Loamy fine sands (284B) NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical Right-of-way
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? No Depth (inches):
Water Table Present? No Depth (inches):
Saturation Present? Yes Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR 2/1 100 FINE SANDY LOAM
3-6 10YR 4/2 80 10YR 4/3 20 C M SANDY LOAM
6-10 10YR 4/3 85 10YR 4/2 15 D M SANDY LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
X Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E7-wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 145.0 x 2 = 290.0
4. _____				FAC 10.5 x 3 = 31.5
5. _____				FACU 0.0 x 4 = 0.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 155.5 (A) 321.5 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 2.07
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Betula alleghaniensis</i>	10.5	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	51	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus hispidus</i>	63	X	FACW	
2. <i>Thelypteris palustris</i>	20.5		FACW	
3. <i>Lyonia ligustrina</i>	20.5		FACW	
4. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
5. _____				
6. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
7. _____				
8. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
9. _____				
10. _____				Woody vine - All woody vines, regardless of height.
11. _____				
12. _____				
	104	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (if observed, list morphological adaptations below).
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W61

E8-upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 11/16/2020
Applicant/Owner: National Grid State: MA Sampling Point: E8-upland
Investigator(s): J. Peterson & M. Murphy Section, Township, Range:
Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.65337 Long: -72.17010 Datum: GCS WGS 1984
Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? - Remarks: Lower than usual rainfall.
Are Normal Circumstances present? - If needed, explain any answers in Remarks:
Are Vegetation, Soil, or Hydrology significantly disturbed? Remarks: Electrical right-of-way
Are Vegetation, Soil, or Hydrology naturally problematic? Remarks: Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5) Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Color (moist), %, Type, Loc, Texture, Remarks. Rows show data for depths 0-1, 1-11, 11-13, and 13-16 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E8-upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>20.5</u> x 2 = <u>41.0</u>
3. _____				FAC <u>0.0</u> x 3 = <u>0.0</u>
4. _____				FACU <u>63.0</u> x 4 = <u>252.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>83.5</u> (A) <u>293.0</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.51</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Pteridium aquilinum	63	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Rubus hispidus	20.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Lysimachia_SP	10.5		NULL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>94</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E8 - wetland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 11/16/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E8 - wetland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.65337 Long: -72.17010 Datum: GCS WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input checked="" type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	<u>Yes</u>
Surface Water Present?	Depth (inches): <u>N/A</u>		
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	<u>X</u> Depth (inches): <u>Surface</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	SANDY_LOAM	
3-5	2.5Y_4/3	100		N/A	N/A	N/A	LOAMY_SAND	
5-7	2.5Y_4/1	100	5YR_4/3	10	C	M	LOAMY_SAND	
7-10	2.5Y_4/2	85	2.5Y_4/3	15	C	M	LOAMY_SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?	<u>Yes</u>
Type: _____ Depth (inches): _____		

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E8 - wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 1 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 76.5 x 1 = 76.5
2. _____				FACW 3.0 x 2 = 6.0
3. _____				FAC 0.0 x 3 = 0.0
4. _____				FACU 0.0 x 4 = 0.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 79.5 (A) 82.5 (B)
7. _____				Prevalence Index = B/A = 1.04
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Calamagrostis canadensis	63	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Carex lurida	10.5		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Spiraea alba	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Glyceria canadensis	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	79	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E8-uplant

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 11/16/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E8-uplant
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range:
 Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.65337 Long: -72.17010 Datum: GCS WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class:
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	No	Is This Sample Area Within a Wetland?	No
Hydric Soil Present?	No		
Wetland Hydrology Present?	No		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Surface Soil Cracks (B6)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)		<input type="checkbox"/> Moss Trim Lines (B16)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)		<input type="checkbox"/> Crayfish Burrows (C8)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)		<input type="checkbox"/> Saturation Visible on Aerial (C9)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)		<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)		<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input type="checkbox"/> FAC-Neutral Test (D5)		
Field Observations:					
Surface Water Present? <input type="checkbox"/>	Depth (inches): <input type="text"/> N/A	Wetland Hydrology Present?	No		
Water Table Present? <input type="checkbox"/>	Depth (inches): <input type="text"/> N/A				
Saturation Present? <input type="checkbox"/>	Depth (inches): <input type="text"/> N/A				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-1	7.5YR_3/2	100		N/A	N/A	N/A	SANDY_LOAM
1-11	7.5YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM
11-13	10YR_3/1	100		N/A	N/A	N/A	SANDY_LOAM
13-16	10YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)		
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)		
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)		<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)		
<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)		
<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Red Parent Material (F21)		
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)			<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
			<input type="checkbox"/> Other (Explain in Remarks)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	No
Type: <input type="text"/>	Depth (inches): <input type="text"/>		
Remarks:			

BSC Wetland RO-W61

VEGETATION - Use scientific names of plants.



Sampling Point: E8-uplant

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>20.5</u> x 2 = <u>41.0</u>
3. _____				FAC <u>0.0</u> x 3 = <u>0.0</u>
4. _____				FACU <u>63.0</u> x 4 = <u>252.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>83.5</u> (A) <u>293.0</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.51</u>
Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Pteridium aquilinum	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Lysimachia_SP	10.5		NULL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>94</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E9-upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E9-upland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.65062 Long: -72.17410 Datum: GCS WGS 1984
 Soil Map Unit: Berkshire-Marlow association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	<u>No</u>
Surface Water Present?	Depth (inches): <u>N/A</u>		
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	7.5YR_3/2	100		N/A	N/A	N/A	SANDY_LOAM	
2-3	5YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	
3-12	7.5YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>No</u>
Type: <u>Rock</u>			
Depth (inches): <u>12</u>			

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E9-upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <i>Betula alleghaniensis</i>	10.5	X	FAC	# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. <i>Tsuga canadensis</i>	10.5	X	FACU	# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>21</u>	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)				Prevalence Index Worksheet:
1. _____				Total % Cover of:
2. _____				Multiply By:
3. _____				OBL <u>0.0</u> x 1 = <u>0.0</u>
4. _____				FACW <u>20.5</u> x 2 = <u>41.0</u>
5. _____				FAC <u>10.5</u> x 3 = <u>31.5</u>
6. _____				FACU <u>31.0</u> x 4 = <u>124.0</u>
7. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
8. _____				Sum: <u>62.0</u> (A) <u>196.5</u> (B)
				Prevalence Index = B/A = <u>3.17</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	20.5	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>20</u>	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W62

E9 - wetland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: E9 - wetland
Applicant/Owner: National Grid
Investigator(s): J. Peterson & M. Murphy
Landform: Depression Local relief: Concave Slope (%):
Subregion: LRR Lat: 42.65061 Long: -72.17400 Datum: GCS WGS 1984
Soil Map Unit: Berkshire-Marlow association NWI Class: PSS
Remarks: Lower than usual rainfall.

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show data for depths 0-1, 1-2, and 2-4 inches.

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 4
Hydric Soil Present? Yes

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E9 - wetland

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. <i>Tsuga canadensis</i>	38	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 2 (A) # Dominants across all strata: 4 (B) % Dominants OBL, FACW, FAC: 50.00% (A/B)	
2. <i>Acer rubrum</i>	20.5	X	FAC		
3. <i>Betula alleghaniensis</i>	10.5		FAC		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	69	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL 0.0 x 1 = 0.0 FACW 0.0 x 2 = 0.0 FAC 69.0 x 3 = 207.0 FACU 41.0 x 4 = 164.0 UPL 0.0 x 5 = 0.0 Sum: 110.0 (A) 371.0 (B) Prevalence Index = B/A = 3.37	
Sapling Stratum (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. <i>Kalmia latifolia</i>	3	X	FACU	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	3	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. <i>Parathelypteris noveboracensis</i>	38	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	38	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover			
				Hydrophytic Vegetation Present? No	

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E10-upland

Project Site: A1B2 City/County: Royalston / Worcester Smp. Date: 8/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E10-upland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.65024 Long: -72.17470 Datum: GCS WGS 1984
 Soil Map Unit: Berkshire-Marlow association NWI Class: _____

Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes , Soil Yes , or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation No , Soil No , or Hydrology No naturally problematic? Remarks: Electrical right-of-way
Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	No	Is This Sample Area Within a Wetland?	No
Hydric Soil Present?	No		
Wetland Hydrology Present?	No		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: _____

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_2/2	100		N/A	N/A	N/A	SANDY_LOAM	
1-2	7.5YR_3/4	100		N/A	N/A	N/A	SANDY_LOAM	
2-10	7.5YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
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Remarks: _____

BSC Wetland RO-W63

VEGETATION - Use scientific names of plants.



Sampling Point: E10-upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>20.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>20.5</u> x 2 = <u>41.0</u>
3. _____				FAC <u>0.0</u> x 3 = <u>0.0</u>
4. _____				FACU <u>52.0</u> x 4 = <u>208.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>72.5</u> (A) <u>249.0</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.43</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Betula lenta</i>	10.5	X	FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>21</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Gaultheria procumbens</i>	20.5	X	FACU	
2. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Elymus hystrix</i>	10.5	X	FACU	
4. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
5. _____				
6. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>51</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E10-wetland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E10-wetland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.65024 Long: -72.17470 Datum: GCS WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> X	<input type="checkbox"/>	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/>	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Saturation Present?	<u>X</u>	Depth (inches):	<u>Surface</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-7	10YR_2/1	40	10YR_4/2	35	D	M	SANDY_LOAM
			7.5YR_4/4	15	C	M	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/>	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/>	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/>	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/>	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/>	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/>	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/>	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/>	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/>	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/>	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/>	<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	
Type:	<u>Rock</u>	<u>Yes</u>	
Depth (inches):	<u>7</u>		
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: E10-wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 1 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 38.0 x 1 = 38.0
3. _____				FACW 13.5 x 2 = 27.0
4. _____				FAC 21.0 x 3 = 63.0
5. _____				FACU 0.0 x 4 = 0.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 72.5 (A) 128.0 (B)
8. _____				Prevalence Index = B/A = 1.77
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Carex lurida	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Parathelypteris noveboracensis	10.5		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Euthamia graminifolia	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Carex scoparia	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Doellingeria umbellata	3		FACW	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	72	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E10-upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E10-upland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.65024 Long: -72.17470 Datum: GCS WGS 1984
 Soil Map Unit: Berkshire-Marlow association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present?	<u>No</u>	
Wetland Hydrology Present?	<u>No</u>	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_2/2	100		N/A	N/A	N/A	SANDY_LOAM	
1-2	7.5YR_3/4	100		N/A	N/A	N/A	SANDY_LOAM	
2-10	7.5YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
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Remarks:

BSC Wetland RO-W63

VEGETATION - Use scientific names of plants.



Sampling Point: E10-upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 20.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 20.5 x 2 = 41.0
3. _____				FAC 0.0 x 3 = 0.0
4. _____				FACU 52.0 x 4 = 208.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 72.5 (A) 249.0 (B)
7. _____				Prevalence Index = B/A = 3.43
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	Dominance Test is > 50%
2. <i>Betula lenta</i>	10.5	X	FACU	Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	21	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Elymus hystrix</i>	10.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	51	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W64

E11 & E12-upland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: E11-upland
Applicant/Owner: National Grid
Investigator(s): J. Peterson & M. Murphy
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.64884 Long: -72.17670 Datum: GCS WGS 1984
Soil Map Unit: Berkshire-Marlow association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks. Includes profile description and data rows.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 0
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E11-upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 3.0 x 1 = 3.0
3. _____				FACW 23.5 x 2 = 47.0
4. _____				FAC 3.0 x 3 = 9.0
5. _____				FACU 13.5 x 4 = 54.0
6. _____				UPL 85.5 x 5 = 427.5
7. _____				Sum: 128.5 (A) 540.5 (B)
8. _____				Prevalence Index = B/A = 4.21
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	3		FACW	_____ Prevalence Index is <= 3.0
3. <i>Betula alleghaniensis</i>	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	16	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	85.5	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Maianthemum canadense</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Lysimachia quadriflora</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	112	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E11-wetland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E11-wetland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.64882 Long: -72.17660 Datum: GCS WGS 1984
 Soil Map Unit: Berkshie-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u> </u> Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	<u> </u> Depth (inches): <u>N/A</u>		
Saturation Present?	<u>X</u> <u> </u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/2	100		N/A	N/A	N/A	MUCKY_LOAM	
2-7	10YR_4/2	100	10YR_4/4	10	C	M	SANDY_LOAM	very stony

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>	<u> </u>	<u>Yes</u>	
Depth (inches): <u>7</u>			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: E11-wetland

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. <i>Acer rubrum</i>	63	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 4 (A) # Dominants across all strata: 5 (B) % Dominants OBL, FACW, FAC: 80.00% (A/B)	
2. <i>Betula alleghaniensis</i>	10.5		FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	73	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL 0.0 x 1 = 0.0 FACW 80.0 x 2 = 160.0 FAC 73.5 x 3 = 220.5 FACU 10.5 x 4 = 42.0 UPL 0.0 x 5 = 0.0 Sum: 164.0 (A) 422.5 (B) Prevalence Index = B/A = 2.58	
Sapling Stratum (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <i>Kalmia latifolia</i>	10.5	X	FACU		
3. <i>Ilex verticillata</i>	10.5	X	FACW		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	31	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. <i>Osmundastrum cinnamomeum</i>	38	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Rubus hispidus</i>	10.5		FACW		
3. <i>Coptis trifolia</i>	10.5		FACW		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	59	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1. _____				Hydrophytic Vegetation Present? Yes	
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W64

E11 & E12-upland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: E11-upland
Applicant/Owner: National Grid
Investigator(s): J. Peterson & M. Murphy
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.64884 Long: -72.17670 Datum: GCS WGS 1984
Soil Map Unit: Berkshire-Marlow association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks. Includes profile description and data rows.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 0
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E11-upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 3.0 x 1 = 3.0
3. _____				FACW 23.5 x 2 = 47.0
4. _____				FAC 3.0 x 3 = 9.0
5. _____				FACU 13.5 x 4 = 54.0
6. _____				UPL 85.5 x 5 = 427.5
7. _____				Sum: 128.5 (A) 540.5 (B)
8. _____				Prevalence Index = B/A = 4.21
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	3		FACW	Prevalence Index is <= 3.0
3. <i>Betula alleghaniensis</i>	3		FAC	Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	16	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Dennstaedtia punctilobula</i>	85.5	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Rubus hispidus</i>	20.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Maianthemum canadense</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Lysimachia quadriflora</i>	3		OBL	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	112	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W65

E12-wetland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: E12-wetland
Applicant/Owner: National Grid
Investigator(s): J. Peterson & M. Murphy
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.64871 Long: -72.17700 Datum: GCS WGS 1984
Soil Map Unit: Bucksport and Wonsqueak mucks NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Electrical right-of-way
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks. Includes profile description and data rows.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E12-wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 10.5 x 1 = 10.5
3. _____				FACW 41.0 x 2 = 82.0
4. _____				FAC 10.5 x 3 = 31.5
5. _____				FACU 20.5 x 4 = 82.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 82.5 (A) 206.0 (B)
8. _____				Prevalence Index = B/A = 2.50
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	20.5	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Nemopanthus mucronatus</i>	10.5	X	OBL	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	31	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Acer rubrum</i>	10.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	51	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
				Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W67

Upland E13

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/24/2020
Applicant/Owner: National Grid State: MA Sampling Point: Upland E13
Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5) Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present?
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show data for depths 0-1, 1-9, and 10-16 inches, all with FINE_SANDY_LOAM texture and 'Stoney' remarks.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Upland E14 and E13

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>2</u> x 4 = <u>8</u>
5. _____				UPL <u>1</u> x 5 = <u>5</u>
6. _____				Sum: <u>6</u> (A) <u>21</u> (B)
7. _____				Prevalence Index = B/A = <u>3.91</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Hamamelis virginiana	10.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>10</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Dennstaedia punctilobula	38	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Pteridium aquilinum	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Spiraea alba	20.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Solidago rugosa	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Cornus canadensis	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>85</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				<u>No</u>
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: A1B2 City/County: Royalston / Worcester Wet plot E13
 Applicant/Owner: National Grid State: MA Samp. Date: 8/24/2020
 Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston Wet plot E13
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.64723 Long: -72.17911 Datum: _____
 Soil Map Unit: Berkshire-Marlow association NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			
Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Water Table Present?	<u>X</u>	Depth (inches):	<u>10</u>
Saturation Present?	<u>X</u>	Depth (inches):	<u>Surface</u>
			Wetland Hydrology Present? <u>Yes</u>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2		100	7.5YR_4/4	5	C	PL	MUCKY_LOAM	Color black N2.5 0
2-4	7.5YR_5/2	100	7.5YR_4/4	15	C	M	FINE_SANDY_LOAM	Refusal on boulders at 4 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>Yes</u>
Type:	<u> </u>		
Depth (inches):	<u> </u>		

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot E14 and E13

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <i>Tsuga canadensis</i>	38	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>6</u> (A) # Dominants across all strata: <u>8</u> (B) % Dominants OBL, FACW, FAC: <u>75.00%</u> (A/B)	
2. <i>Acer rubrum</i>	20.5	X	FAC		
3. <i>Pinus strobus</i>	10.5		FACU		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>69</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0</u> x 1 = <u>0</u> FACW <u>5</u> x 2 = <u>10</u> FAC <u>3</u> x 3 = <u>9</u> FACU <u>3</u> x 4 = <u>12</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>11</u> (A) <u>31</u> (B) Prevalence Index = B/A = <u>2.88</u>	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <i>Spiraea alba</i>	20.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>	
2. <i>Ilex verticillata</i>	10.5	X	FACW		
3. <i>Hamamelis virginiana</i>	10.5	X	FACU		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>41</u>	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <i>Onoclea sensibilis</i>	20.5	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Solidago rugosa</i>	20.5	X	FAC		
3. <i>Doellingeria umbellata</i>	20.5	X	FACW		
4. <i>Osmundastrum cinnamomeum</i>	10.5		FACW		
5. <i>Athyrium angustum</i>	10.5		FAC		
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	<u>82</u>	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>	
2. _____					
3. _____					
4. _____					
5. _____					
	<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W67

Upland E14

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/24/2020
Applicant/Owner: National Grid State: MA Sampling Point: Upland E14
Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present?
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-1 7.5YR_3/3 100 N/A N/A N/A FINE_SANDY_LOAM
1-9 7.5YR_4/4 100 N/A N/A N/A FINE_SANDY_LOAM Stony
10-16 10YR_4/4 100 N/A N/A N/A FINE_SANDY_LOAM Stony
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Upland E14 and E13

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>2</u> x 4 = <u>8</u>
5. _____				UPL <u>1</u> x 5 = <u>5</u>
6. _____				Sum: <u>6</u> (A) <u>21</u> (B)
7. _____				Prevalence Index = B/A = <u>3.91</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Hamamelis virginiana</i>	10.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>10</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	38	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pteridium aquilinum</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Spiraea alba</i>	20.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago rugosa</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Cornus canadensis</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>85</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				<u>No</u>
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W67

Wet plot E14

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: Wet plot E14
Applicant/Owner: National Grid
Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.64723 Long: -72.17911 Datum:
Soil Map Unit: Berkshire-Marlow association NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C6)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): 10
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
0-2: 7.5YR_4/4, 5, C, PL, MUCKY_LOAM, Color black N2.5 0
2-4: 7.5YR_5/2, 15, C, M, FINE_SANDY_LOAM, Refusal on boulders at 4 inches

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1)
Histlic Epipedon (A2)
Black Histlic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot E14 and E13

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <i>Tsuga canadensis</i>	38	X	FACU	# Dominants OBL, FACW, FAC: <u>6</u> (A)
2. <i>Acer rubrum</i>	20.5	X	FAC	# Dominants across all strata: <u>8</u> (B)
3. <i>Pinus strobus</i>	10.5		FACU	% Dominants OBL, FACW, FAC: <u>75.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>69</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>5</u> x 2 = <u>10</u>
3. _____				FAC <u>3</u> x 3 = <u>9</u>
4. _____				FACU <u>3</u> x 4 = <u>12</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>11</u> (A) <u>31</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.88</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Hamamelis virginiana</i>	10.5	X	FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>41</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Onoclea sensibilis</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Solidago rugosa</i>	20.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Doellingeria umbellata</i>	20.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	Woody vine - All woody vines, regardless of height.
5. <i>Athyrium angustum</i>	10.5		FAC	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>82</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland AT-W1

E15 upland plot

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 8/24/2020
Applicant/Owner: National Grid State: MA Sampling Point: E15 upland plot
Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 12-15%
Subregion (LRR or MLRA): LRR Lat: 42.64378 Long: -72.18438 Datum:
Soil Map Unit: Berkshire-Marlow association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
0-3 10YR_2/2 100 N/A N/A N/A FINE_SANDY_LOAM
3-5 10YR_5/1 100 N/A N/A N/A LOAMY_FINE_SAND
5-14 7.5YR_4/6 100 N/A N/A N/A LOAMY_SAND Refusal at 14 inches

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E15 upland plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 60.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 21.0 x 2 = 42.0
4. _____				FAC 20.5 x 3 = 61.5
5. _____				FACU 79.0 x 4 = 316.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 120.5 (A) 419.5 (B)
8. _____				Prevalence Index = B/A = 3.48
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Viburnum nudum</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Crataegus_SP</i>	3		NULL	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Vaccinium angustifolium</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Kalmia angustifolia</i>	20.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	99	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland AT-W1

E15 wet plot

Project Site: A1B2 City/County: Athol / Worcester State: MA Samp. Date: 8/24/2020
Applicant/Owner: National Grid State: MA Sampling Point: E15 wet plot
Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 6
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix, Redox Features, Type, Loc, Texture, Remarks

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E15 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 2 x 2 = 4
4. _____				FAC 4 x 3 = 12
5. _____				FACU 1 x 4 = 4
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 7 (A) 20 (B)
8. _____				Prevalence Index = B/A = 2.84
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Viburnum lentago</i>	3		FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	16	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Kalmia angustifolia</i>	63	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Cornus canadensis</i>	20.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	97	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E1-upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E1-upland
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Shoulderslope Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.66188 Long: -72.15697 Datum: GCS WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? yes If needed, explain any answers in Remarks: _____
 Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>no</u>	Is This Sample Area Within a Wetland?	<u>no</u>
Hydric Soil Present?	<u>no</u>		
Wetland Hydrology Present?	<u>no</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>	Wetland Hydrology Present?	<u>no</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Saturation Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 3/2	100		N/A	N/A	N/A	LOAMY SAND	
1-10	10YR 5/3	100		N/A	N/A	N/A	GRAVELLY SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>no</u>
Type: <u>Rock</u>			
Depth (inches): <u>10</u>			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: E1-upland

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. Acer rubrum	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>40.00%</u> (A/B)	
2. Pinus strobus	10.5	X	FACU		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	21	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>0.0</u> x 2 = <u>0.0</u> FAC <u>13.5</u> x 3 = <u>40.5</u> FACU <u>54.5</u> x 4 = <u>218.0</u> UPL <u>63.0</u> x 5 = <u>315.0</u> Sum: <u>131.0</u> (A) <u>573.5</u> (B) Prevalence Index = B/A = <u>4.38</u>	
Sapling Stratum (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. Betula alleghaniensis	3	X	FAC	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. Juniperus communis	3	X	FACU		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	6	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. Festuca ovina	63	X	UPL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. Juniperus communis	20.5		FACU		
3. Gaultheria procumbens	20.5		FACU		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	104	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover		Hydrophytic Vegetation Present? <u>no</u>	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E1-wet

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E1-wet
 Investigator(s): J. Peterson & M. Murphy Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.66181 Long: -72.15688 Datum: GCS WGS 1984
 Soil Map Unit: Bucksport and Wonsquek mucks NWI Class: PFO
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Lower than usual rainfall.
 Are Normal Circumstances present? yes If needed, explain any answers in Remarks: _____
 Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Remarks: Electrical right-of-way
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: Electrical right-of-way
 Electrical right-of-way

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>yes</u>	Is This Sample Area Within a Wetland?	<u>yes</u>
Hydric Soil Present?	<u>yes</u>		
Wetland Hydrology Present?	<u>yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>yes</u>	
Water Table Present?	Depth (inches): <u>15</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 2/2	100		N/A	N/A	N/A	FINE SANDY LOAM	
4-7	10YR 3/2	90	10YR 4/2	10	D	M	FINE SANDY LOAM	
7-10	10YR 4/3	90	10YR 5/2	10	D	M	FINE SANDY LOAM	
10-15	10YR 5/2	80	10YR 5/3	20	C	M	SANDY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	
Type:	_____	<u>yes</u>	
Depth (inches):	_____		
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: E1-wet

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. <i>Acer rubrum</i>	63	X	FAC	# Dominants OBL, FACW, FAC: 5 (A)
2. <i>Pinus strobus</i>	38	X	FACU	# Dominants across all strata: 7 (B)
3. _____				% Dominants OBL, FACW, FAC: 71.43% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	101	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. <i>Acer rubrum</i>	38	X	FAC	OBL 0.0 x 1 = 0.0
2. _____				FACW 58.5 x 2 = 117.0
3. _____				FAC 114.5 x 3 = 343.5
4. _____				FACU 69.0 x 4 = 276.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 242.0 (A) 736.5 (B)
7. _____				
8. _____				Prevalence Index = B/A = 3.04
	38	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Vaccinium corymbosum</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Acer rubrum</i>	10.5	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	48	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Mitchella repens</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Osmunda cinnamomea</i>	20.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Gaultheria procumbens</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Parathelypteris noveboracensis</i>	3		FAC	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	54	= Total Cover		Hydrophytic Vegetation Present? yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Other



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W41

Upland plot F23

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: Upland plot F23
Applicant/Owner: National Grid
Investigator(s): CR and EM Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.66082 Long: -72.15373 Datum:
Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-1 10YR_3/1 100 N/A N/A N/A N/A LOAM
1-4 10YR_6/1 100 N/A N/A N/A N/A LOAM
4-12 7.5YR_4/6 100 N/A N/A N/A N/A GRAVELLY_LOAM Rock refusal at 12 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Rock Hydric Soil Present? No
Depth (inches): 12
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Upland plot F23

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>2</u> x 2 = <u>4</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>5</u> x 4 = <u>20</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>9</u> (A) <u>30</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.97</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	85.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Juniperus communis</i>	20.5		FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Pinus strobus</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Morphological Adaptations
6. <i>Quercus rubra</i>	3		FACU	
7. _____				
8. _____				
	<u>118</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	85.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	20.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Lycopodium clavatum</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>116</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (if observed, list morphological adaptations below).
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetlandplot F23

Project Site: A1B2 City/County: Royalston / Worcester State: MA Samp. Date: 9/16/2020
 Applicant/Owner: National Grid Section, Township, Range: Royalston Sampling Point: Wetlandplot F23
 Investigator(s): CR and EM Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.66117 Long: -72.15481 Datum:
 Soil Map Unit: Thunbidge-Lyman-Berkshire association NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	Yes		
Wetland Hydrology Present?	Yes		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<input checked="" type="checkbox"/> Depth (inches): 3	Yes	
Water Table Present?	<input checked="" type="checkbox"/> Depth (inches): Surface		
Saturation Present?	<input checked="" type="checkbox"/> Depth (inches): Surface		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR_2/1	100		N/A	N/A	N/A	MUCKY MINERAL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:		Yes	
Depth (inches):			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetlandplot F23

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 9 x 1 = 9
2. _____				FACW 2 x 2 = 4
3. _____				FAC 1 x 3 = 3
4. _____				FACU 0 x 4 = 0
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 12 (A) 16 (B)
7. _____				Prevalence Index = B/A = 2.83
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	3	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	0		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	6	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Sparganium americanum</i>	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Dulichium arundinaceum</i>	20.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Calamagrostis canadensis</i>	20.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Ludwigia palustris</i>	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Leersia oryzoides</i>	10.5		OBL	
6. <i>Lysimachia terrestris</i>	10.5		OBL	
7. <i>Scirpus cyperinus</i>	10.5		OBL	
8. <i>Iris versicolor</i>	3		OBL	
9. <i>Juncus effusus</i>	3		OBL	
10. _____				
11. _____				
12. _____				
	127	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
				Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W42

Upland plot F22

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/16/2020
Applicant/Owner: National Grid State: MA Sampling Point: Upland plot F22
Investigator(s): CR and EM Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.66017 Long: -72.15250 Datum:
Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
0-18 10YR_5/8 100 N/A N/A N/A FINE_SANDY_LOAM

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Upland plot F22

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>2</u> x 2 = <u>4</u>
3. _____				FAC <u>3</u> x 3 = <u>9</u>
4. _____				FACU <u>3</u> x 4 = <u>12</u>
5. _____				UPL <u>1</u> x 5 = <u>5</u>
6. _____				Sum: <u>9</u> (A) <u>30</u> (B)
7. _____				Prevalence Index = B/A = <u>2.89</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	10.5	X	FAC	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	3		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>19</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus flagellaris</i>	20.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Symphotrichum divaricatum</i>	3		UPL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Lycopodium clavatum</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. <i>Diphasiastrum_SP</i>	3		NULL	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>105</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				<input type="checkbox"/> Yes
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot F22

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/16/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wet plot F22
 Investigator(s): CR and EM Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.65999 Long: -72.15214 Datum: _____
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>3</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR_2/1	100		N/A	N/A	N/A	MUCK	Histosol

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot F22

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>8</u> x 1 = <u>8</u>
2. _____				FACW <u>3</u> x 2 = <u>6</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>0</u> x 4 = <u>0</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>11</u> (A) <u>14</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.74</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea tomentosa</i>	3	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>6</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Leersia oryzoides</i>	85.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Calamagrostis canadensis</i>	38	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Typha latifolia</i>	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Lysimachia hybrida</i>	10.5		OBL	Woody vine - All woody vines, regardless of height.
5. <i>Carex lurida</i>	10.5		OBL	
6. <i>Pericaria sagittata</i>	3		OBL	
7. <i>Scirpus cyperinus</i>	3		OBL	
8. <i>Hypericum mutilum</i>	3		FACW	
9. <i>Dulichium arundinaceum</i>	3		OBL	
10. _____				
11. _____				
12. _____				
	<u>167</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W43

Upland plot F21

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: Upland plot F21
Investigator(s): CR and EM Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 1-2%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Field Observations: Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(0-9) 7.5YR_4/6 100 N/A N/A N/A LOAM Rock refusal at 9 inches
Hydric Soil Indicators: Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils: 2 cm Muck (A10) (LRR K, L, MLRA 149B)

VEGETATION - Use scientific names of plants.



Sampling Point: Upland plot F21

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 20.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 0 x 2 = 0
3. _____				FAC 3 x 3 = 9
4. _____				FACU 5 x 4 = 20
5. _____				UPL 1 x 5 = 5
6. _____				Sum: 9 (A) 34 (B)
7. _____				Prevalence Index = B/A = 3.96
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	20.5	X	FACU	Dominance Test is > 50%
2. Betula lenta	10.5	X	FACU	Prevalence Index is <= 3.0
3. Acer rubrum	10.5	X	FAC	Problematic Hydrophytic Vegetation ¹ (explain)
4. Kalmia angustifolia	3		FAC	Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	44	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus flagellaris	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Gaultheria procumbens	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Dennstaedtia punctilobula	10.5		UPL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Lycopodium clavatum	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Aralia nudicaulis	3		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	100	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot F21

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/16/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wet plot F21
 Investigator(s): CR and EM Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.65923 Long: -72.15038 Datum: _____
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-16	10YR_4/1	70	10YR_6/2	20	D	M	SILT_LOAM
			10YR_4/6	10	C	M,PL	Rock refusal at 16

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Rock</u>		Hydric Soil Present?	<u>Yes</u>
Depth (inches): <u>16</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot F21

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>7</u> (A)
2. _____				# Dominants across all strata: <u>7</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>4</u> x 1 = <u>4</u>
2. _____				FACW <u>7</u> x 2 = <u>14</u>
3. _____				FAC <u>4</u> x 3 = <u>12</u>
4. _____				FACU <u>3</u> x 4 = <u>12</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>18</u> (A) <u>42</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.75</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea tomentosa</i>	10.5		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	10.5		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Kalmia angustifolia</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Betula lenta</i>	3		FACU	<input type="checkbox"/> Morphological Adaptations
6. <i>Lyonia ligustrina</i>	3		FACW	
7. _____				
8. _____				
	<u>68</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispida</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Viola cucullata</i>	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Acer rubrum</i>	10.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Calamagrostis canadensis</i>	10.5	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Symphotrichum novae-angliae</i>	10.5	X	FACW	
6. <i>Eleocharis palustris</i>	10.5	X	OBL	
7. <i>Solidago gigantea</i>	3		FACW	
8. <i>Plantago major</i>	3		FACU	
9. <i>Solidago rugosa</i>	3		FAC	
10. <i>Scirpus cyperinus</i>	3		OBL	
11. <i>Symphotrichum lanceolatum</i>	3		FACW	
12. <i>Gaultheria procumbens</i>	0		FACU	
	<u>88</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W45

Upland plot F19

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/16/2020
Applicant/Owner: National Grid State: MA Sampling Point: Upland plot F19
Investigator(s): CR and EM Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.65749 Long: -72.14651 Datum:
Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
Data rows for depths 0-1, 1-3, 3-10, 10-18 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Upland plot F19

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: 0 (A)
2. _____	_____	_____	_____	# Dominants across all strata: 3 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: OBL 0 x 1 = 0
2. _____	_____	_____	_____	FACW 1 x 2 = 2
3. _____	_____	_____	_____	FAC 4 x 3 = 12
4. _____	_____	_____	_____	FACU 5 x 4 = 20
5. _____	_____	_____	_____	UPL 0 x 5 = 0
6. _____	_____	_____	_____	Sum: 10 (A) 34 (B)
7. _____	_____	_____	_____	Prevalence Index = B/A = 2.85
8. _____	_____	_____	_____	
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	38	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. Vaccinium corymbosum	10.5		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Betula lenta	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Kalmia angustifolia	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. Acer rubrum	0		FAC	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	54	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Gaultheria procumbens	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus flagellaris	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Pteridium aquilinum	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Athyrium angustum	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Lycopodium clavatum	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	125	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____	_____	_____	_____	<input type="checkbox"/>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W45

Wet plot F19

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: Wet plot F19
Applicant/Owner: National Grid Section, Township, Range: Royalston
Investigator(s): CR and EM Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Color (moist), %, Type, Loc, Texture, Remarks. Includes data for depths 0-9 and 9-14 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 14
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot F19

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>3</u> x 1 = <u>3</u>
2. _____				FACW <u>6</u> x 2 = <u>12</u>
3. _____				FAC <u>1</u> x 3 = <u>3</u>
4. _____				FACU <u>1</u> x 4 = <u>4</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>11</u> (A) <u>22</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.67</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Betula lenta</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Viburnum dentatum</i>	0		FAC	<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>27</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Carex lurida</i>	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Thelypteris palustris</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Viola cucullata</i>	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Osmundastrum cinnamomeum</i>	3		FACW	
6. <i>Juncus effusus</i>	3		OBL	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>75</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W46

200903WFF11 upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: 200903WFF11 upland
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 5-8%
Subregion (LRR or MLRA): Lat: 42.65427 Long: -72.13731 Datum:
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Data rows for depths 0-4, 4-6, and 6-12 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: 200903WFF11 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 1 x 2 = 2
3. _____				FAC 0 x 3 = 0
4. _____				FACU 10 x 4 = 40
5. _____				UPL 1 x 5 = 5
6. _____				Sum: 12 (A) 47 (B)
7. _____				Prevalence Index = B/A = 2.81
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	38	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Juniperus communis</i>	20.5	X	FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Betula lenta</i>	10.5		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Lyonia ligustrina</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Prunus serotina</i>	3		FACU	<input type="checkbox"/> Morphological Adaptations
6. <i>Pinus strobus</i>	3		FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	78	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	63	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pteridium aquilinum</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Gaultheria procumbens</i>	38	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Rubus flagellaris</i>	38	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Aralia nudicaulis</i>	10.5		FACU	Woody vine - All woody vines, regardless of height.
6. <i>Solidago canadensis</i>	3		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	190	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W46

200903WFF11 wet

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: 200903WFF11 wet
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Other Lakeside (beaver impoundment) Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.65441 Long: -72.13784 Datum:
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
X Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B15)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): 4
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show data for depths 0-8 and 8-20 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1)
X Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: 200903WFF11 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 6 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 8 x 1 = 8
3. _____				FACW 2 x 2 = 4
4. _____				FAC 0 x 3 = 0
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 10 (A) 12 (B)
8. _____				Prevalence Index = B/A = 1.22
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Juncus acuminatus	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Sparganium americanum	20.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Juncus effusus	20.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Leersia oryzoides	20.5	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Bidens frondosa	20.5	X	FACW	Woody vine - All woody vines, regardless of height.
6. Eupatorium perfoliatum	20.5	X	FACW	
7. Hypericum virginicum	10.5		OBL	
8. Carex comosa	10.5		OBL	
9. Dulichium arundinaceum	10.5		OBL	
10. Carex lurida	10.5		OBL	
11. _____				
12. _____				
	182	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W47

200903WFF10 upland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: 200903WFF10 upland
Applicant/Owner: National Grid
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): Lat: 42.65379 Long: -72.13624 Datum:
Soil Map Unit: Becket fine sandy loam, 8 to 15 percent slopes NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-14 10YR_3/4 94 10YR_5/6 6 C M GRAVELLY_LOAM Refusal at 14
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? No
Depth (inches): 14
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: 200903WFF10 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>2</u> x 2 = <u>4</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>4</u> x 4 = <u>16</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>8</u> (A) <u>26</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.14</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Solidago rugosa	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Rubus idaeus	38	X	FACU	
3. Clematis virginiana	38	X	FAC	
4. Phleum pratense	38	X	FACU	
5. Onoclea sensibilis	20.5		FACW	
6. Apios americana	20.5		FACW	
7. Vicia sativa	10.5		FACU	
8. Galium mollugo	10.5		FACU	
9. _____				
10. _____				
11. _____				
12. _____				
	<u>214</u>	= Total Cover		Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
1. _____				Woody vine - All woody vines, regardless of height.
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W47

200903WFF10 wetland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: 200903WFF10 wetland
Applicant/Owner: National Grid
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.65366 Long: -72.13607 Datum:
Soil Map Unit: Becket fine sandy loam, 8 to 15 percent slopes NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show data for depths 0-8 and 8-20 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) X Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: 200903WFF10 wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 2 x 1 = 2
3. _____				FACW 4 x 2 = 8
4. _____				FAC 1 x 3 = 3
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 7 (A) 13 (B)
8. _____				Prevalence Index = B/A = 1.46
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex laevigata	20.5	X	OBL	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	20	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Impatiens capensis	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Persicaria sagittata	38	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Onoclea sensibilis	20.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Clematis virginiana	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Osmundastrum cinnamomeum	10.5		FACW	Woody vine - All woody vines, regardless of height.
6. Symphyotrichum novae-angliae	3		FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	145	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W48

200902WFF9 upland

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: 200902WFF9 upland
Applicant/Owner: National Grid
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.65237 Long: -72.13166 Datum:
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix Color (moist), %, Redox Features Color (moist), %, Type1, Loc2, Texture, Remarks. Data rows for 0-2 and 2-10 inch depths.

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 10
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: 200902WFF9 upland

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>0</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>0.00%</u> (A/B)	
2.						
3.						
4.						
5.						
6.						
7.						
8.						
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0</u> x 1 = <u>0</u> FACW <u>1</u> x 2 = <u>2</u> FAC <u>3</u> x 3 = <u>9</u> FACU <u>6</u> x 4 = <u>24</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>10</u> (A) <u>35</u> (B) Prevalence Index = B/A = <u>3.85</u>	
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>	
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>	
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W48

200902WFF9 wet

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/2/2020
 Applicant/Owner: National grid State: MA Sampling Point: 200902WFF9 wet
 Investigator(s): DCR DMH Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): _____
 Subregion (LRR or MLRA): LRR Lat: 42.65226 Long: -72.13177 Datum: _____
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u>X</u> Depth (inches): <u>3</u>	<u>Yes</u>	
Water Table Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Saturation Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Saturation present due to recent heavy rainfall. Indicator A3 is assumed absent under normal conditions.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/1	100		N/A	N/A	N/A	MUCKY_PEAT	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input checked="" type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>8</u>			
Remarks: Assumed to meet A3 indicator due to rock refusal			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: 200902WFF9 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 3 x 1 = 3
2. _____				FACW 7 x 2 = 14
3. _____				FAC 2 x 3 = 6
4. _____				FACU 0 x 4 = 0
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 12 (A) 23 (B)
7. _____				Prevalence Index = B/A = 1.91
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Alnus incana</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	37	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Carex crinita</i>	20.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Doellingeria umbellata</i>	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Persicaria sagittata</i>	10.5		OBL	
6. <i>Clematis virginiana</i>	10.5		FAC	
7. <i>Solidago rugosa</i>	10.5		FAC	
8. <i>Calamagrostis canadensis</i>	3		OBL	
9. _____				
10. _____				
11. _____				
12. _____				
	106	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W50

200901WFF7 upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: 200901WFF7 upland
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.65138 Long: -72.12861 Datum:
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Data rows for 0-6 and 6-16 inch depths.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 16
Hydric Soil Present? No

Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: 200901WFF7 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet:	
2. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)	
3. _____				# Dominants across all strata: <u>5</u> (B)	
4. _____				% Dominants OBL, FACW, FAC: <u>20.00%</u> (A/B)	
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:	
1. _____				OBL <u>2</u>	x 1 = <u>2</u>
2. _____				FACW <u>1</u>	x 2 = <u>2</u>
3. _____				FAC <u>1</u>	x 3 = <u>3</u>
4. _____				FACU <u>7</u>	x 4 = <u>28</u>
5. _____				UPL <u>1</u>	x 5 = <u>5</u>
6. _____				Sum: <u>12</u> (A)	<u>40</u> (B)
7. _____				Prevalence Index = B/A = <u>2.56</u>	
8. _____					
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%	
1. <i>Kalmia angustifolia</i>	10.5	X	FAC	X Prevalence Index is <= 3.0	
2. <i>Tsuga canadensis</i>	10.5	X	FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)	
3. <i>Hamamelis virginiana</i>	3		FACU	_____ Rapid Test for Hydrophytic Vegetation	
4. <i>Lyonia ligustrina</i>	3		FACW	_____ Morphological Adaptations	
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
6. _____					
7. _____					
8. _____					
	<u>27</u>	= Total Cover		Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
1. <i>Pteridium aquilinum</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
2. <i>Gaultheria procumbens</i>	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
3. <i>Rubus flagellaris</i>	20.5	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
4. <i>Solidago canadensis</i>	10.5		FACU	Woody vine - All woody vines, regardless of height.	
5. <i>Scirpus cyperinus</i>	10.5		OBL		
6. <i>Dennstaedtia punctilobula</i>	10.5		UPL		
7. <i>Juncus effusus</i>	10.5		OBL		
8. <i>Carex gracillima</i>	10.5		FACU		
9. _____					
10. _____					
11. _____					
12. _____					
	<u>114</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>	
Woody Vines (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W49

200901WFF8

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: 200901WFF8
Applicant/Owner: National Grid
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
Subregion (LRR or MLRA): LRR Lat: 42.65199 Long: -72.13070 Datum:
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: PEM PEM1E
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) X Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 8
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Other

SOIL

Table with 9 columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type, Loc), Texture, Remarks. Rows show data for depths 0-4, 4-16, and 16-20 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes

Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: 200901WFF8

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>1</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>2</u> x 1 = <u>2</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>0</u> x 4 = <u>0</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>3</u> (A) <u>4</u> (B)
7. _____				Prevalence Index = B/A = <u>1.09</u>
8. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Carex crinita</i>	98	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Impatiens capensis</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Persicaria sagittata</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>111</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W50

200901WFF7 upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: 200901WFF7 upland
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.65138 Long: -72.12861 Datum:
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Table with 9 columns: Depth (in), Matrix Color (moist), Matrix %, Redox Features Color (moist), Redox Features %, Type, Loc, Texture, Remarks. Data rows for 0-6 and 6-16 inch depths.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 16
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: 200901WFF7 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:	
1. _____				# Dominants OBL, FACW, FAC:	1 (A)
2. _____				# Dominants across all strata:	5 (B)
3. _____				% Dominants OBL, FACW, FAC:	20.00% (A/B)
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover			
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:	
1. _____				Total % Cover of:	Multiply By:
2. _____				OBL 2 x 1 =	2
3. _____				FACW 1 x 2 =	2
4. _____				FAC 1 x 3 =	3
5. _____				FACU 7 x 4 =	28
6. _____				UPL 1 x 5 =	5
7. _____				Sum: 12 (A)	40 (B)
8. _____				Prevalence Index = B/A =	2.56
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:	
1. <i>Kalmia angustifolia</i>	10.5	X	FAC	Dominance Test is > 50%	
2. <i>Tsuga canadensis</i>	10.5	X	FACU	X Prevalence Index is <= 3.0	
3. <i>Hamamelis virginiana</i>	3		FACU	Problematic Hydrophytic Vegetation ¹ (explain)	
4. <i>Lyonia ligustrina</i>	3		FACW	Rapid Test for Hydrophytic Vegetation	
5. _____				Morphological Adaptations	
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
7. _____					
8. _____					
	27	= Total Cover			
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:	
1. <i>Pteridium aquilinum</i>	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
2. <i>Gaultheria procumbens</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
3. <i>Rubus flagellaris</i>	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
4. <i>Solidago canadensis</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
5. <i>Scirpus cyperinus</i>	10.5		OBL	Woody vine - All woody vines, regardless of height.	
6. <i>Dennstaedia punctilobula</i>	10.5		UPL		
7. <i>Juncus effusus</i>	10.5		OBL		
8. <i>Carex gracillima</i>	10.5		FACU		
9. _____					
10. _____					
11. _____					
12. _____					
	114	= Total Cover			
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?	
1. _____				Yes	
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W50

200901WFF7

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: 200901WFF7
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.65129 Long: -72.12848 Datum:
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
X Surface Water (A1) Water-Stained Leaves (B9)
X High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? X Depth (inches): 2
Water Table Present? X Depth (inches): 16
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Other

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/1 100 N/A N/A N/A MUCKY_PEAT
6-18 10YR_2/1 100 N/A N/A N/A LOAMY_SAND
18-20 10YR_2/1 95 10YR_3/6 5 C M LOAMY_SAND
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histlic Epipedon (A2)
X Black Histlic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks: Other

VEGETATION - Use scientific names of plants.



Sampling Point: 200901WFF7

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 2 x 1 = 2
2. _____				FACW 4 x 2 = 8
3. _____				FAC 2 x 3 = 6
4. _____				FACU 1 x 4 = 4
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 9 (A) 20 (B)
7. _____				Prevalence Index = B/A = 2.02
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Kalmia angustifolia</i>	20.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Ilex laevigata</i>	3		OBL	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Ostrya virginiana</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	89	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Thelypteris palustris</i>	63	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Persicaria sagittata</i>	20.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago rugosa</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	160	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.

Parameter met



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W51

200901WFF6 upland

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: 200901WFF6 upland
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.65075 Long: -72.12663 Datum:
Soil Map Unit: Becket-Monadnock association, 15 to 45 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation Yes, Soil -, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 14
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-10 10YR_2/1 100 N/A N/A N/A SILT_LOAM
10-60 10YR_3/1 60 10YR_4/2 40 D M LOAMY_SAND
16-20 10YR_4/2 92 10YR_5/8 8 D M SANDY_LOAM
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:
Other

VEGETATION - Use scientific names of plants.



Sampling Point: 200901WFF6 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 0 x 2 = 0
3. _____				FAC 2 x 3 = 6
4. _____				FACU 6 x 4 = 24
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 8 (A) 30 (B)
7. _____				Prevalence Index = B/A = 3.94
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Tsuga canadensis</i>	10.5	X	FACU	Dominance Test is > 50%
2. <i>Hamamelis virginiana</i>	3	X	FACU	Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	13	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	63	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus flagellaris</i>	63	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Osmunda claytoniana</i>	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Carex gracillima</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. <i>Cornus canadensis</i>	3		FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	205	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.

Parameter not met



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W51

200901WFF6

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 9/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: 200901WFF6
 Investigator(s): DCR DMH Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.65070 Long: -72.12679 Datum: _____
 Soil Map Unit: Becket-Monadnock association, 15 to 45 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u>X</u> Depth (inches): <u>2</u>	<u>Yes</u>	
Water Table Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Saturation Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Other			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/1	100		N/A	N/A	N/A	MUCKY_PEAT	Refusal at 8 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input checked="" type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>8</u>			
Remarks: Other			

VEGETATION - Use scientific names of plants.



Sampling Point: 200901WFF6

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>2</u> x 1 = <u>2</u>
2. _____				FACW <u>6</u> x 2 = <u>12</u>
3. _____				FAC <u>1</u> x 3 = <u>3</u>
4. _____				FACU <u>1</u> x 4 = <u>4</u>
5. _____				UPL <u>1</u> x 5 = <u>5</u>
6. _____				Sum: <u>11</u> (A) <u>26</u> (B)
7. _____				Prevalence Index = B/A = <u>2.02</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Vaccinium corymbosum</i>	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Alnus incana</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>97</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Hydrocotyle americana</i>	10.5		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Impatiens capensis</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Persicaria sagittata</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Dennstaedtia punctilobula</i>	3		UPL	Woody vine - All woody vines, regardless of height.
6. <i>Rubus idaeus</i>	3		FACU	
7. <i>Arisaema triphyllum</i>	3		FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>96</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.

Parameter met



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W52

G-35-UPL

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: G-35-UPL
Applicant/Owner: National Grid
Investigator(s): C. Cyrus. N. Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.64864 Long: -72.12065 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_4/2 100 N/A N/A N/A SILT_LOAM
2-8 10YR_4/6 100 N/A N/A N/A SILT_LOAM
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 6
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-35-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>6</u> (A) # Dominants across all strata: <u>10</u> (B) % Dominants OBL, FACW, FAC: <u>60.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0</u> x 1 = <u>0</u> FACW <u>5</u> x 2 = <u>10</u> FAC <u>3</u> x 3 = <u>9</u> FACU <u>5</u> x 4 = <u>20</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>13</u> (A) <u>39</u> (B) Prevalence Index = B/A = <u>3.10</u>
Sapling Stratum	(Plot size: 30 ft)				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		
Shrub Stratum	(Plot size: 15 ft)				
1.	<i>Kalmia angustifolia</i>	38	X	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2.	<i>Ilex verticillata</i>	10.5	X	FACW	
3.	<i>Viburnum nudum</i>	10.5	X	FACW	
4.	<i>Spiraea tomentosa</i>	10.5	X	FACW	
5.	<i>Juniperus communis</i>	10.5	X	FACU	
6.	<i>Acer rubrum</i>	3		FAC	
7.	<i>Quercus rubra</i>	0		FACU	
8.					
		<u>83</u>	= Total Cover		
Herb Stratum	(Plot size: 5 ft)				
1.	<i>Gaultheria procumbens</i>	38	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2.	<i>Bromus pubescens</i>	10.5	X	FACU	
3.	<i>Pteridium aquilinum</i>	10.5	X	FACU	
4.	<i>Rubus hispidus</i>	10.5	X	FACW	
5.	<i>Rubus hispidus</i>	10.5	X	FACW	
6.	<i>Osmunda claytoniana</i>	3		FAC	
7.					
8.					
9.					
10.					
11.					
12.					
		<u>83</u>	= Total Cover		
Woody Vines	(Plot size: 30 ft)				
1.					Hydrophytic Vegetation Present? <u>Yes</u>
2.					
3.					
4.					
5.					
		<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W52

G-35-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/31/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-35-WET
 Investigator(s): C. Cyrus, N. Newberry Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.64858 Long: -72.12066 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Standing water in ruts along access road	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-10	10YR_3/2	70	10YR_4/3	30	C	M	SANDY_LOAM

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>10</u>	Hydric Soil Present? <u>Yes</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: G-35-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	3		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	0		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	41	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	85.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Calamagrostis canadensis</i>	3		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Doellingeria umbellata</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago rugosa</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Euthamia graminifolia</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. <i>Symphotrichum novi-belgii</i>	3		FACW	
7. <i>Scirpus cyperinus</i>	3		OBL	
8. <i>Rubus hispidus</i>	3		FACW	
9. _____				
10. _____				
11. _____				
12. _____				
	106	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W53

G-34-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-34-UPL
Investigator(s): C. Cyrus, N. Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.64833 Long: -72.12010 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_2/1 100 N/A N/A N/A SILT_LOAM
2-4 10YR_4/3 100 N/A N/A N/A SILT_LOAM
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 4
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-34-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Acer rubrum</i>	3	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Fagus grandifolia</i>	0		FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	3	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmunda claytoniana</i>	63	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pteridium aquilinum</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Cornus canadensis</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Athyrium asplenoides</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Rubus hispidus</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	117	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W53

G-34-WET

Project Site: A1B2 City/County: Royalston / Worcester State: MA Sampling Point: G-34-WET
Applicant/Owner: National Grid
Investigator(s): C. Cyrus, N. Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.64832 Long: -72.11986 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) X Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Sphagnum present throughout
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_2/1 100 N/A N/A N/A SILT_LOAM Assume hydric
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. X Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 3
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-34-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Kalmia angustifolia	3		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Betula alleghaniensis	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	69	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Onoclea sensibilis	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Glyceria striata	10.5		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Rubus hispidus	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Osmunda claytoniana	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	79	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-33-UPL

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/31/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-33-UPL
 Investigator(s): C. Cyrus, N. Newberry Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.64752 Long: -72.11749 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/1	100		N/A	N/A	N/A	SILT_LOAM	
2-6	5YR_5/8	100		N/A	N/A	N/A	GRAVELLY_SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>6</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-33-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>60.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1.	<i>Kalmia angustifolia</i>	38	X	FAC	
2.	<i>Ilex verticillata</i>	20.5	X	FACW	
3.	<i>Gaylussacia baccata</i>	20.5	X	FACU	
4.	<i>Tsuga canadensis</i>	0		FACU	
5.					
6.					
7.					
8.					
		79	= Total Cover		
Herb Stratum (Plot size: 5 ft)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Cornus canadensis</i>	63	X	FAC	
2.	<i>Gaultheria procumbens</i>	63	X	FACU	
3.	<i>Solidago canadensis</i>	3		FACU	
4.	<i>Pteridium aquilinum</i>	3		FACU	
5.	<i>Rubus hispidus</i>	3		FACW	
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		135	= Total Cover		
Woody Vines (Plot size: 30 ft)					Hydrophytic Vegetation Present? <u>Yes</u>
1.					
2.					
3.					
4.					
5.					
		0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland RO-W54

G-33-WET

Project Site: A1B2 City/County: Royalston / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-33-WET
Investigator(s): C. Cyrus, N. Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.64742 Long: -72.11727 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
X Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
The wetland is heavily rutted and contains artificial hummocks, however, there is also natural microtopographic relief occurring in the lower areas.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_2/1 100 N/A N/A N/A MUCKY MINERAL
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) X Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 2
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-33-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Pinus strobus</i>	0		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	51	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Carex bromoides</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Carex lurida</i>	10.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Juncus effusus</i>	0		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	86	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.

Athol, Massachusetts Forms

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WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E15 upland plot

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E15 upland plot
 Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 12-15%
 Subregion (LRR or MLRA): LRR Lat: 42.64378 Long: -72.18438 Datum: _____
 Soil Map Unit: Berkshire-Marlow association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
3-5	10YR_5/1	100		N/A	N/A	N/A	LOAMY_FINE_SAND	
5-14	7.5YR_4/6	100		N/A	N/A	N/A	LOAMY_SAND	Refusal at 14 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>No</u>	
Depth (inches): _____			
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E15 upland plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 60.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 21.0 x 2 = 42.0
4. _____				FAC 20.5 x 3 = 61.5
5. _____				FACU 79.0 x 4 = 316.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 120.5 (A) 419.5 (B)
8. _____				Prevalence Index = B/A = 3.48
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Viburnum nudum</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Crataegus_SP</i>	3		NULL	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Vaccinium angustifolium</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Kalmia angustifolia</i>	20.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	99	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E15 wet plot

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E15 wet plot
 Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR Lat: 42.64381 Long: -72.18432 Datum: _____
 Soil Map Unit: Look up later no service NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present? <u>Yes</u>	
Surface Water Present? _____	Depth (inches): <u>N/A</u>		
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? <u>X</u>	Depth (inches): <u>6</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	<u>N_2.5/</u>	<u>100</u>		<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>MUCKY_LOAM</u>	
4-10	<u>10YR_4/2</u>	<u>65</u>	<u>10YR_5/2</u>	<u>15</u>	<u>D</u>	<u>M</u>		<u>Rock refusal at 10 inches</u>
			<u>10YR_5/3</u>	<u>10</u>	<u>C</u>	<u>M</u>		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present? <u>Yes</u>	
Type: _____	Depth (inches): _____		
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E15 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 2 x 2 = 4
4. _____				FAC 4 x 3 = 12
5. _____				FACU 1 x 4 = 4
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 7 (A) 20 (B)
8. _____				Prevalence Index = B/A = 2.84
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Viburnum lentago</i>	3		FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	16	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Kalmia angustifolia</i>	63	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Cornus canadensis</i>	20.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	97	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

UplandE16

Project Site: A1B2 City/County: Athol / Worcester State: MA Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: UplandE16
 Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR Lat: 42.64164 Long: -72.18727 Datum: GCS WGS 1984
 Soil Map Unit: Berkshire-Marlow association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? - Remarks: _____
 Are Normal Circumstances present? - If needed, explain any answers in Remarks: _____
 Are Vegetation -, Soil -, or Hydrology - significantly disturbed? Remarks: Maintained utility row
 Are Vegetation -, Soil -, or Hydrology - naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Saturation Present?	<u> </u>	Depth (inches):	<u>N/A</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_3/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
6-8	10YR_5/3	100		N/A	N/A	N/A	SANDY_LOAM	
8-15	10YR_5/3	100	10YR_5/4	10	C	M	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>No</u>
Type: _____			
Depth (inches): _____			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: UplandE16

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. <i>Tsuga canadensis</i>	38	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 2 (A) # Dominants across all strata: 8 (B) % Dominants OBL, FACW, FAC: 25.00% (A/B)	
2. <i>Acer rubrum</i>	10.5	X	FAC		
3.					
4.					
5.					
6.					
7.					
8.					
	48	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL 0.0 x 1 = 0.0 FACW 10.5 x 2 = 21.0 FAC 48.5 x 3 = 145.5 FACU 176.5 x 4 = 706.0 UPL 0.0 x 5 = 0.0 Sum: 235.5 (A) 872.5 (B) Prevalence Index = B/A = 3.70	
Sapling Stratum (Plot size: 30 ft)					
1. <i>Tsuga canadensis</i>	20.5	X	FACU		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
	20	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. <i>Hamamelis virginiana</i>	10.5	X	FACU	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <i>Tsuga canadensis</i>	10.5	X	FACU		
3.					
4.					
5.					
6.					
7.					
8.					
	21	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. <i>Vaccinium angustifolium</i>	38	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Cornus canadensis</i>	38	X	FAC		
3. <i>Gaultheria procumbens</i>	38	X	FACU		
4. <i>Pteridium aquilinum</i>	10.5		FACU		
5. <i>Osmundastrum cinnamomeum</i>	10.5		FACW		
6. <i>Mitchella repens</i>	10.5		FACU		
7.					
8.					
9.					
10.					
11.					
12.					
	145	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1.				Hydrophytic Vegetation Present? No	
2.					
3.					
4.					
5.					
	0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E16 wet plot

Project Site: A1B2 City/County: Athol / Worcester State: MA Sampling Point: E16 wet plot
Applicant/Owner: National Grid
Investigator(s): J. Peterson and E. Martin
Landform: Flat Local relief: Flat Slope (%): <1%
Subregion: LRR Lat: 42.64178 Long: -72.18735 Datum:
Soil Map Unit: Berkshire-Marlo's association NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
X Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C6)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? X Depth (inches): 1
Water Table Present? X Depth (inches): 6
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows for 0-3 and 3-6 inch depths.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
X Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:
Other

VEGETATION - Use scientific names of plants.



Sampling Point: E16 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet:	
2. _____				# Dominants OBL, FACW, FAC: 4 (A)	
3. _____				# Dominants across all strata: 5 (B)	
4. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)	
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:	
1. _____				OBL 10.5	x 1 = 10.5
2. _____				FACW 58.5	x 2 = 117.0
3. _____				FAC 51.5	x 3 = 154.5
4. _____				FACU 10.5	x 4 = 42.0
5. _____				UPL 0.0	x 5 = 0.0
6. _____				Sum: 131.0 (A)	324.0 (B)
7. _____				Prevalence Index = B/A = 2.47	
8. _____					
	0	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations	
1. Aronia melanocarpa	20.5	X	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. Spiraea alba	20.5	X	FACW		
3. Rubus idaeus	10.5	X	FACU		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	51	= Total Cover		Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
1. Doellingeria umbellata	38	X	FACW	Woody vine - All woody vines, regardless of height.	
2. Euthamia graminifolia	20.5	X	FAC		
3. Solidago rugosa	10.5		FAC		
4. Carex crinita	10.5		OBL		
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	79	= Total Cover		Hydrophytic Vegetation Present? Yes	
Woody Vines (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).

Assumed hydric due to site conditions (hydrology and hydrophilic vegetation prevalence). Disturbed soil indicator



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E17 upland

Project Site: A1B2 City/County: Athol / Worcester State: MA Sampling Point: E17 upland
Applicant/Owner: National Grid
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Royalston
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.64138 Long: -72.18813 Datum:
Soil Map Unit: Charlton-Chatfield association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_4/3 100 N/A N/A N/A LOAM Augar refusal at 6 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Rock Hydric Soil Present? No
Depth (inches): 6
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E17 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 16.5 x 2 = 33.0
3. _____				FAC 86.5 x 3 = 259.5
4. _____				FACU 34.0 x 4 = 136.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 137.0 (A) 428.5 (B)
7. _____				Prevalence Index = B/A = 3.13
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Kalmia angustifolia</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Quercus rubra</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	19	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Solidago rugosa</i>	63	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	20.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Euthamia graminifolia</i>	20.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Dichanthelium clandestinum</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	117	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E17 Wetland

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E17 Wetland
 Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.64148 Long: -72.18812 Datum: _____
 Soil Map Unit: Charlotte-Chatfield association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_2/1	95	10YR_3/3	5	C	M	LOAM	Augar refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>6</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E17 Wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 75.0 x 2 = 150.0
3. _____				FAC 3.0 x 3 = 9.0
4. _____				FACU 13.5 x 4 = 54.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 91.5 (A) 213.0 (B)
7. _____				Prevalence Index = B/A = 2.33
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Salix discolor</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Quercus rubra</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Ilex verticillata</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	37	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Symphotrichum novae-angliae</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago canadensis</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dryopteris intermedia</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	54	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (If observed, list morphological adaptations below).
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Upland plot E18

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Upland plot E18
 Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.64037 Long: -72.18926 Datum: _____
 Soil Map Unit: Berkshire-Marlo's association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Upland plot E18

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <i>Betula alleghaniensis</i>	20.5	X	FAC	# Dominants OBL, FACW, FAC: <u>5</u> (A)
2. <i>Tsuga canadensis</i>	20.5	X	FACU	# Dominants across all strata: <u>8</u> (B)
3. <i>Acer rubrum</i>	10.5	X	FAC	% Dominants OBL, FACW, FAC: <u>62.50%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>51</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. <i>Betula alleghaniensis</i>	10.5	X	FAC	OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>3.0</u> x 2 = <u>6.0</u>
3. _____				FAC <u>44.5</u> x 3 = <u>133.5</u>
4. _____				FACU <u>41.0</u> x 4 = <u>164.0</u>
5. _____				UPL <u>63.0</u> x 5 = <u>315.0</u>
6. _____				Sum: <u>151.5</u> (A)
7. _____				<u>618.5</u> (B)
8. _____				Prevalence Index = B/A = <u>4.08</u>
	<u>10</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Viburnum nudum</i>	3	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Kalmia angustifolia</i>	3	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>6</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Dennstaedtia punctilobula</i>	63	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Pteridium aquilinum</i>	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>83</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot E18

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wet plot E18
 Investigator(s): J. Peterson and E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.64045 Long: -72.18910 Datum: _____
 Soil Map Unit: Berkshire-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			
Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Saturation Present?	<u>X</u>	Depth (inches):	<u>Surface</u>
Wetland Hydrology Present?			<u>Yes</u>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2		100		N/A	N/A	N/A		Fragments histosol extremely bouldery

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>Yes</u>
Type:	<u>Bedrock, boulders</u>		
Depth (inches):	<u>2</u>		

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot E18

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. Pinus strobus	20.5	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>6</u> (A) # Dominants across all strata: <u>9</u> (B) % Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)	
2. Tsuga canadensis	20.5	X	FACU		
3. Acer rubrum	20.5	X	FAC		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>61</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>41.5</u> x 2 = <u>83.0</u> FAC <u>41.5</u> x 3 = <u>124.5</u> FACU <u>51.5</u> x 4 = <u>206.0</u> UPL <u>3.0</u> x 5 = <u>15.0</u> Sum: <u>137.5</u> (A) <u>428.5</u> (B) Prevalence Index = B/A = <u>3.12</u>	
Sapling Stratum (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. Tsuga canadensis	10.5	X	FACU	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>	
2. Lyonia ligustrina	10.5	X	FACW		
3. Betula alleghaniensis	10.5	X	FAC		
4. Spiraea alba	10.5	X	FACW		
5. Ilex vomitoria	3		UPL		
6. _____					
7. _____					
8. _____					
	<u>45</u>	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. Rubus hispidus	20.5	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. Dryopteris intermedia	10.5	X	FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	<u>31</u>	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1. _____				Hydrophytic Vegetation Present? <u>No</u>	
2. _____					
3. _____					
4. _____					
5. _____					
	<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland E19 (upland plot)

Project Site: A1/B2 Line City/County: Athol / Worcester Samp. Date: 8/28/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland E19 (upland plot)
 Investigator(s): Nicole Martin and Jeff Peterson Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.63790 Long: -72.19174 Datum: NAD 83
 Soil Map Unit: Charlton-Chatfield-Hollis association, 15 to 45 percent slopes, very rocky NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? <u> </u> Depth (inches): <u>N/A</u> Water Table Present? <u> </u> Depth (inches): <u>N/A</u> Saturation Present? <u> </u> Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_3/1	100		N/A	N/A	N/A	SANDY_LOAM	
3-14	10YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland E19 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>2</u> x 2 = <u>4</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>3</u> x 4 = <u>12</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>5</u> (A) <u>16</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.59</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Corylus americana</i>	10.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>10</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus hispidus</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Gaultheria procumbens</i>	10.5	X	FACU	
3. <i>Pteridium aquilinum</i>	10.5	X	FACU	
4. <i>Osmundastrum cinnamomeum</i>	3		FACW	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>34</u>	= Total Cover		Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
1. _____				Woody vine - All woody vines, regardless of height.
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).
Other



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland E19 (wetland plot)

Project Site: A1/B2 Line City/County: Athol / Worcester Samp. Date: 8/28/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland E19 (wetland plot)
 Investigator(s): Nicole Martin and Jeff Peterson Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.63784 Long: -72.19171 Datum: NAD 83
 Soil Map Unit: Charlton-Chatfield-Hollis association, 15 to 45 percent slopes, very rocky NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:				
Surface Water Present?	<u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	
Water Table Present?	<u>X</u>	Depth (inches): <u>1</u>		<u>Yes</u>
Saturation Present?	<u>X</u>	Depth (inches): <u>Surface</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	2.5Y_2.5/1	100		N/A	N/A	N/A	PEAT	Organics. Dead sphagnum moss.
1-5	2.5YR_2.5/1	95	2.5Y_4/4	5	C	PL	SANDY_LOAM	
5-8	2.5Y_2.5/1	95	2.5Y_4/4	5	C	PL	MUCKY_LOAM	Mucky sandy loam.

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>Yes</u>
Type: <u>Rock</u>			
Depth (inches): <u>8</u>			

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland E19 (wetland)

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>5</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>2</u> x 1 = <u>2</u> FACW <u>7</u> x 2 = <u>14</u> FAC <u>2</u> x 3 = <u>6</u> FACU <u>0</u> x 4 = <u>0</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>11</u> (A) <u>22</u> (B) Prevalence Index = B/A = <u>2.38</u>
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1.	<i>Lyonia ligustrina</i>	10.5	X	FACW	
2.	<i>Betula alleghaniensis</i>	3		FAC	
3.	<i>Spiraea alba</i>	3		FACW	
4.	<i>Ilex verticillata</i>	3		FACW	
5.					
6.					
7.					
8.					
		<u>19</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Rubus hispidus</i>	38	X	FACW	
2.	<i>Spiraea tomentosa</i>	10.5	X	FACW	
3.	<i>Lysimachia terrestris</i>	10.5	X	OBL	
4.	<i>Thelypteris palustris</i>	10.5	X	FACW	
5.	<i>Spiraea alba</i>	3		FACW	
6.	<i>Solidago rugosa</i>	3		FAC	
7.	<i>Scirpus cyperinus</i>	3		OBL	
8.					
9.					
10.					
11.					
12.					
		<u>78</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)					Hydrophytic Vegetation Present? <u>Yes</u>
1.					
2.					
3.					
4.					
5.					
		<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland E20 (upland plot)

Project Site: A1/B2 Line City/County: Athol / Worcester Samp. Date: 8/28/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland E20 (upland plot)
 Investigator(s): Nicole Martin and Jeff Peterson Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.63580 Long: -72.19265 Datum: NAD 83
 Soil Map Unit: Ridgebury-Whitman association, 0 to 8 percent slopes, extremely stony NWI Class:
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes _____ Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation No _____, Soil No _____, or Hydrology No _____ significantly disturbed? Remarks: _____
 Are Vegetation No _____, Soil No _____, or Hydrology No _____ naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	2.5Y 2.5/1	100		N/A	N/A	N/A	SANDY_LOAM	
2-3	7.5YR_5/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	E horizon
3-6	7.5YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	
6-11	10YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	
11-16	2.5Y_3/4	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland E20 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>4</u> x 3 = <u>12</u>
4. _____				FACU <u>2</u> x 4 = <u>8</u>
5. _____				UPL <u>1</u> x 5 = <u>5</u>
6. _____				Sum: <u>8</u> (A) <u>27</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.49</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	20.5	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Frangula alnus	3		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Betula alleghaniensis	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>26</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Solidago rugosa	38	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Dennstaedtia punctilobula	10.5		UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Kalmia angustifolia	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Dichanthelium clandestinum	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Pteridium aquilinum	3		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>57</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				<u>No</u>
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland E20 (wetland plot)

Project Site: A1/B2 Line City/County: Athol / Worcester State: MA Samp. Date: 8/28/2020
 Applicant/Owner: National Grid Section, Township, Range: Athol Sampling Point: Wetland E20 (wetland plot)
 Investigator(s): Nicole Martin and Jeff Peterson Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.63585 Long: -72.19267 Datum: NAD 83
 Soil Map Unit: Ridgebury-Whitman association, 0 to 8 percent slopes, extremely stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u>X</u> Depth (inches): <u>8</u>	<u>Yes</u>	
Water Table Present?	<u>X</u> Depth (inches): <u>3</u>		
Saturation Present?	<u>X</u> Depth (inches): <u>0</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	2.5Y_2.5/1	100		N/A	N/A	N/A	MUCKY_LOAM	Mucky fine sandy loam
1-18	2.5Y_5/6	75	2.5Y_5/3	20	C	M	SANDY_LOAM	Stony sandy loam
			2.5Y_5/4	5	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input checked="" type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland E20 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>6</u> (A)
2. _____				# Dominants across all strata: <u>6</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>6</u> x 1 = <u>6</u>
2. _____				FACW <u>3</u> x 2 = <u>6</u>
3. _____				FAC <u>1</u> x 3 = <u>3</u>
4. _____				FACU <u>0</u> x 4 = <u>0</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>10</u> (A) <u>15</u> (B)
7. _____				Prevalence Index = B/A = <u>2.37</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Sparganium americanum	20.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Leersia oryzoides	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Carex lurida	10.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Rubus hispidus	10.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Juncus canadensis	10.5	X	OBL	Woody vine - All woody vines, regardless of height.
6. Scirpus cyperinus	10.5	X	OBL	
7. Bidens frondosa	3		FACW	
8. Juncus effusus	3		OBL	
9. Euthamia graminifolia	3		FAC	
10. Spiraea tomentosa	3		FACW	
11. _____				
12. _____				
	<u>85</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				<u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland E21 (upland plot)

Project Site: A1/B2 Line City/County: Athol / Worcester Samp. Date: 8/28/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland E21 (upland plot)
 Investigator(s): Nicole Martin and Jeff Peterson Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR Lat: 42.63418 Long: -72.19332 Datum: NAD 83
 Soil Map Unit: Montauk-Scituate-Canton association, 3 to 15 percent slopes, extremely stony NWI Class:
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <input type="checkbox"/> No	Is This Sample Area Within a Wetland? <input type="checkbox"/> No
Hydric Soil Present? <input type="checkbox"/> No	
Wetland Hydrology Present? <input type="checkbox"/> No	
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13)</p> <p><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15)</p> <p><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)</p> <p><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p>Secondary Indicators (minimum of two required)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
<p>Field Observations:</p> <p>Surface Water Present? <input type="checkbox"/> Depth (inches): <input type="checkbox"/> N/A</p> <p>Water Table Present? <input type="checkbox"/> Depth (inches): <input type="checkbox"/> N/A</p> <p>Saturation Present? <input type="checkbox"/> Depth (inches): <input type="checkbox"/> N/A</p>	<p>Wetland Hydrology Present? <input type="checkbox"/> No</p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_3/3	100		N/A	N/A	N/A	SANDY_LOAM	Stony
3-11	7.5YR_4/6	100		N/A	N/A	N/A	SANDY_LOAM	
11-15	10YR_4/4	100		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</p> <p><input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)</p> <p><input type="checkbox"/> Red Parent Material (F21)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>	
<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? <input type="checkbox"/> No</p>
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland E21 (upland)

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)	
2.						
3.						
4.						
5.						
6.						
7.						
8.						
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0</u> x 1 = <u>0</u> FACW <u>1</u> x 2 = <u>2</u> FAC <u>2</u> x 3 = <u>6</u> FACU <u>3</u> x 4 = <u>12</u> UPL <u>1</u> x 5 = <u>5</u> Sum: <u>7</u> (A) <u>25</u> (B) Prevalence Index = B/A = <u>3.47</u>	
Sapling Stratum (Plot size: 30 ft)						
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
		<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Shrub Stratum (Plot size: 15 ft)						
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
		<u>0</u>	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
Herb Stratum (Plot size: 5 ft)						
1.	Rubus hispidus	38	X	FACW		
2.	Gaultheria procumbens	38	X	FACU		
3.	Dennstaedtia punctilobula	20.5		UPL		
4.	Vaccinium angustifolium	10.5		FACU		
5.	Parathelypteris noveboracensis	3		FAC		
6.	Cornus canadensis	3		FAC		
7.	Pteridium aquilinum	3		FACU		
8.						
9.						
10.						
11.						
12.						
		<u>116</u>	= Total Cover			
Woody Vines (Plot size: 30 ft)						
1.						
2.						
3.						
4.						
5.						
		<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>	

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland E21 (wetland plot)

Project Site: A1/B2 Line City/County: Athol / Worcester Samp. Date: 8/28/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland E21 (wetland plot)
 Investigator(s): Nicole Martin and Jeff Peterson Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.63421 Long: -72.19342 Datum: NAD 83
 Soil Map Unit: Ridgebury-Whitman association, 0 to 8 percent slopes, extremely stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: _____	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? <u>X</u> Depth (inches): <u>6</u> Water Table Present? <u>X</u> Depth (inches): <u>1</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: _____

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	2.5Y_3/1	100		N/A	N/A	N/A	MUCKY_LOAM	Mucky fine sandy loam.
3-8	2.5Y_4/1	60	10YR_4/4	20	C	M	FINE_SANDY_LOAM	
			10YR_5/1	20	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>Yes</u>
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Remarks: _____

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland E21 (wetland)

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.					Dominance Test Worksheet:	
2.					# Dominants OBL, FACW, FAC: 4 (A)	
3.					# Dominants across all strata: 4 (B)	
4.					% Dominants OBL, FACW, FAC: 100.00% (A/B)	
5.						
6.						
7.						
8.						
		0	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:		Multiply By:
1.					OBL 3	x 1 = 3
2.					FACW 7	x 2 = 14
3.					FAC 0	x 3 = 0
4.					FACU 0	x 4 = 0
5.					UPL 0	x 5 = 0
6.					Sum: 10 (A)	17 (B)
7.					Prevalence Index = B/A = 2.46	
8.						
		0	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)				X Dominance Test is > 50%		
1.	<i>Ilex verticillata</i>	10.5	X	FACW	X Prevalence Index is <= 3.0	
2.	<i>Lyonia ligustrina</i>	10.5	X	FACW	Problematic Hydrophytic Vegetation ¹ (explain)	
3.					Rapid Test for Hydrophytic Vegetation	
4.					Morphological Adaptations	
5.					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
6.						
7.						
8.						
		21	= Total Cover		Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).		
1.	<i>Thelypteris palustris</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
2.	<i>Leersia oryzoides</i>	38	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
3.	<i>Persicaria hydropiperoides</i>	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
4.	<i>Onoclea sensibilis</i>	10.5		FACW	Woody vine - All woody vines, regardless of height.	
5.	<i>Eupatorium perfoliatum</i>	10.5		FACW		
6.	<i>Doellingeria umbellata</i>	10.5		FACW		
7.	<i>Scirpus cyperinus</i>	3		OBL		
8.	<i>Hypericum canadense</i>	3		FACW		
9.						
10.						
11.						
12.						
		124	= Total Cover		Hydrophytic Vegetation Present? Yes	
Woody Vines (Plot size: 30 ft)						
1.						
2.						
3.						
4.						
5.						
		0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E25 up

Project Site: A1B2 tap City/County: Athol / Worcester State: MA Samp. Date: 9/18/2020
 Applicant/Owner: _____ Sampling Point: E25 up
 Investigator(s): JP and MB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): _____ Slope (%): 8-12%
 Subregion (LRR or MLRA): _____ Lat: 42.63176 Long: -72.19444 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? - _____ Remarks: Drought
 Are Normal Circumstances present? - _____ If needed, explain any answers in Remarks: Drought
 Are Vegetation - _____, Soil - _____, or Hydrology - _____ significantly disturbed? Remarks: Maintained row
 Are Vegetation - _____, Soil - _____, or Hydrology - _____ naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E25 up

Tree Stratum (Plot size: _____)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>10.5</u> x 2 = <u>21.0</u> FAC <u>3.0</u> x 3 = <u>9.0</u> FACU <u>10.5</u> x 4 = <u>42.0</u> UPL <u>85.5</u> x 5 = <u>427.5</u> Sum: <u>109.5</u> (A) <u>499.5</u> (B) Prevalence Index = B/A = <u>4.56</u>
Sapling Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	
2. <i>Acer rubrum</i>	3	X	FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>13</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Dennstaedtia punctilobula</i>	85.5	X	UPL	
2. <i>Pteridium aquilinum</i>	10.5		FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>96</u> = Total Cover				
Woody Vines (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				Hydrophytic Vegetation Present? <u>No</u>

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E25 Wet

Project Site: A1B2 Tap City/County: Athol / Worcester State: MA Samp. Date: 9/18/2020
 Applicant/Owner: _____ Sampling Point: E25 Wet
 Investigator(s): JP and MB Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): _____ Lat: 42.63188 Long: -72.19457 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought
 Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Maintained ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Graded

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		

Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/>	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> X
		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)
			<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:			
Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Saturation Present?	<u> </u>	Depth (inches):	<u>N/A</u>
		Wetland Hydrology Present?	<u>Yes</u>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
3	10YR_3/2	90	7.5YR_4/4	8	C	M,PL	FINE_SANDY_LOAM	
3-7	10YR_2/1	100		N/A	N/A	N/A	MUCKY_LOAM	mucky fine sandy loam
7-9	2.5Y_4/1	98	2.5Y_4/3	2	C	M	FINE_SANDY_LOAM	Refused on stones

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>Yes</u>
Type:	<u> </u>		
Depth (inches):	<u> </u>		

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: E25 Wet

Tree Stratum (Plot size: _____)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: _____)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>21.0</u> x 1 = <u>21.0</u>
2. _____				FACW <u>86.5</u> x 2 = <u>173.0</u>
3. _____				FAC <u>0.0</u> x 3 = <u>0.0</u>
4. _____				FACU <u>0.0</u> x 4 = <u>0.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>107.5</u> (A) <u>194.0</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>1.80</u>
Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>20</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus hispidus</i>	63	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Carex lurida</i>	10.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Persicaria arifolia</i>	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Thelypteris palustris</i>	3		FACW	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>87</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: _____)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E26 wetland

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E26 wetland
 Investigator(s): E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.63134 Long: -72.19455 Datum: _____
 Soil Map Unit: Charlton-Chatfield-Hollis association NWI Class: PFO
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>8</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/2	100		N/A	N/A	N/A	MUCKY_PEAT	
2-6	10YR_2/1	100		N/A	N/A	N/A	MUCK	Rock refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>6</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E26 wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. Pinus strobus	38	X	FACU	# Dominants OBL, FACW, FAC: 2 (A)
2. Quercus rubra	3		FACU	# Dominants across all strata: 5 (B)
3.				% Dominants OBL, FACW, FAC: 40.00% (A/B)
4.				
5.				
6.				
7.				
8.				
	41	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Fagus grandifolia	10.5	X	FACU	Total % Cover of: OBL 0.0 x 1 = 0.0
2. Quercus rubra	10.5	X	FACU	FACW 87.0 x 2 = 174.0
3.				FAC 3.0 x 3 = 9.0
4.				FACU 62.0 x 4 = 248.0
5.				UPL 0.0 x 5 = 0.0
6.				Sum: 152.0 (A) 431.0 (B)
7.				Prevalence Index = B/A = 2.84
8.				
	21	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Vaccinium corymbosum	10.5	X	FACW	<input type="checkbox"/> Dominance Test is > 50%
2. Acer rubrum	3		FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Spiraea alba	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4.				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5.				<input type="checkbox"/> Morphological Adaptations
6.				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7.				
8.				
	16	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Osmundastrum cinnamomeum	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3.				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4.				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5.				Woody vine - All woody vines, regardless of height.
6.				
7.				
8.				
9.				
10.				
11.				
12.				
	73	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1.				<input type="checkbox"/>
2.				
3.				
4.				
5.				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E27 upland

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E27 upland
 Investigator(s): E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.62916 Long: -72.19582 Datum: _____
 Soil Map Unit: Charlton-Paxton association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_3/2	100		N/A	N/A	N/A	LOAM	
2-6	10YR_4/4	100		N/A	N/A	N/A	LOAM	Rock refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Rock</u>		Hydric Soil Present?	<u>No</u>
Depth (inches): <u>6</u>			
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E27 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 20.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 0.0 x 2 = 0.0
4. _____				FAC 13.5 x 3 = 40.5
5. _____				FACU 117.5 x 4 = 470.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 131.0 (A) 510.5 (B)
8. _____				Prevalence Index = B/A = 3.90
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	20.5	X	FACU	Dominance Test is > 50%
2. Betula lenta	10.5	X	FACU	Prevalence Index is <= 3.0
3. Kalmia angustifolia	10.5	X	FAC	Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				
7. _____				
8. _____				
	41	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Gaultheria procumbens	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus flagellaris	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Cornus canadensis	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Pteridium aquilinum	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	89	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E27 Wetland

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E27 Wetland
 Investigator(s): E. Martin Section, Township, Range: Royalston
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.62904 Long: -72.19580 Datum: _____
 Soil Map Unit: Charlton-Paxton association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/1	100		N/A	N/A	N/A	SANDY_LOAM	
2-5	10YR_4/1	95	7.5YR_4/6	5	C	M	COARSE_SANDY_LOAM	Rock refusal at 5 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>5</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E27 Wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 107.0 x 2 = 214.0
3. _____				FAC 19.5 x 3 = 58.5
4. _____				FACU 6.0 x 4 = 24.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 132.5 (A) 296.5 (B)
7. _____				Prevalence Index = B/A = 2.24
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Viburnum dentatum</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Betula lenta</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Tsuga canadensis</i>	3		FACU	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	40	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Spiraea alba</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Kalmia angustifolia</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago rugosa</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	92	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E28

Project Site: A1B2 tap City/County: Athol / Worcester State: MA Samp. Date: 9/18/2020
 Applicant/Owner: _____ Sampling Point: E28
 Investigator(s): JP and MB Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 12-15%
 Subregion (LRR or MLRA): _____ Lat: 42.62711 Long: -72.19695 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained row
 Are Vegetation No, Soil Yes, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
5	10YR_2/2	100		N/A	N/A	N/A	LOAM	
5-8	10YR_2/2	100		N/A	N/A	N/A	LOAM	Boulder refusal

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: E28

Tree Stratum (Plot size: _____)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>6</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>16.67%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: _____)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>10.5</u> x 1 = <u>10.5</u>
2. _____				FACW <u>21.0</u> x 2 = <u>42.0</u>
3. _____				FAC <u>0.0</u> x 3 = <u>0.0</u>
4. _____				FACU <u>103.0</u> x 4 = <u>412.0</u>
5. _____				UPL <u>38.0</u> x 5 = <u>190.0</u>
6. _____				Sum: <u>172.5</u> (A) <u>654.5</u> (B)
7. _____				Prevalence Index = B/A = <u>3.79</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Rubus allegheniensis</i>	10.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Prunus pensylvanica</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>24</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Mitchella repens</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Dennstaedtia punctilobula</i>	38	X	UPL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Lysimachia quadriflora</i>	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Doellingeria umbellata</i>	10.5		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Solidago canadensis</i>	3		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>138</u>	= Total Cover		
Woody Vines (Plot size: <u>15 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. <i>Vitis labrusca</i>	10.5		FACU	<input type="checkbox"/> No
2. _____				
3. _____				
4. _____				
5. _____				
	<u>10</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E28 wet

Project Site: A1B2 tap City/County: Athol / Worcester Samp. Date: 9/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E28 wet
 Investigator(s): JP and MB Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 12-15%
 Subregion (LRR or MLRA): LRR Lat: 42.62713 Long: -72.19693 Datum: _____
 Soil Map Unit: Charlton-Paxton association, 15 to 45 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type ¹			
0-5	10YR_2/2	95	10YR_4/4	5	C	M,PL	LOAM	Fragmental, refusal (boulders)

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Boulders/Bedrock</u>		<u>Yes</u>	
Depth (inches): <u>5</u>			
Remarks:			
Indicator F6 (Redox Dark Surface) present and soil meets NTCHS definition of hydric soil. Parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: E28 wet

Tree Stratum (Plot size: _____)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>38.0</u> x 1 = <u>38.0</u> FACW <u>13.5</u> x 2 = <u>27.0</u> FAC <u>51.5</u> x 3 = <u>154.5</u> FACU <u>20.5</u> x 4 = <u>82.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>123.5</u> (A) <u>301.5</u> (B) Prevalence Index = B/A = <u>2.44</u>	
Sapling Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____					
	<u>0</u>	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>) 1. <i>Rosa palustris</i> 38 X OBL 2. <i>Acer rubrum</i> 3 FAC 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
	<u>41</u>	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>) 1. <i>Osmunda claytoniana</i> 38 X FAC 2. <i>Onoclea sensibilis</i> 10.5 FACW 3. <i>Solidago rugosa</i> 10.5 FAC 4. <i>Dichanthelium clandestinum</i> 3 FACW 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____					
	<u>62</u>	= Total Cover			
Woody Vines (Plot size: <u>15 ft</u>) 1. <i>Vitis labrusca</i> 20.5 FACU 2. _____ 3. _____ 4. _____ 5. _____					
	<u>20</u>	= Total Cover			
Hydrophytic Vegetation Present? <u>Yes</u>					

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E-29-UPL

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E-29-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR Lat: 42.62606 Long: -72.19729 Datum: _____
 Soil Map Unit: Charlton-Paxton association, 15 to 45 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		

Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	<u>No</u>
Surface Water Present?	Depth (inches): <u>N/A</u>		
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/2	100		N/A	N/A	N/A	LOAM	Auger refusal at 6in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>No</u>
Type: <u>Rock</u>	Depth (inches): <u>6</u>		

Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: E-29-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 25.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 10.5 x 2 = 21.0
3. _____				FAC 26.5 x 3 = 79.5
4. _____				FACU 34.0 x 4 = 136.0
5. _____				UPL 85.5 x 5 = 427.5
6. _____				Sum: 156.5 (A) 664.0 (B)
7. _____				Prevalence Index = B/A = 4.24
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	20.5	X	FACU	Dominance Test is > 50%
2. Rubus pensilvanicus	10.5	X	FACU	Prevalence Index is <= 3.0
3. Spiraea alba	10.5	X	FACW	Problematic Hydrophytic Vegetation ¹ (explain)
4. Betula lenta	3		FACU	Rapid Test for Hydrophytic Vegetation
5. Acer rubrum	3		FAC	Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	47	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Dennstaedia punctilobula	85.5	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Solidago rugosa	20.5		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Dryopteris intermedia	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	109	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E-29-WET

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E-29-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.62611 Long: -72.19723 Datum: _____
 Soil Map Unit: Charlton-Paxton association, 15 to 45 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	<u> </u> Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	<u> </u> Depth (inches): <u>N/A</u>		
Saturation Present?	<input checked="" type="checkbox"/> <u> </u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/2	90	10YR_3/4	10	C	M	GRAVELLY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>Yes</u>	
Depth (inches): <u>6</u>			
Remarks:			
Indicator F6 (Redox Dark Surface) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: E-29-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Liquidambar styraciflua	10.5	X	FAC	Total % Cover of:
2. _____				OBL 3.0 x 1 = 3.0
3. _____				FACW 73.5 x 2 = 147.0
4. _____				FAC 13.5 x 3 = 40.5
5. _____				FACU 3.0 x 4 = 12.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 93.0 (A) 202.5 (B)
8. _____				Prevalence Index = B/A = 2.18
	10	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Alnus incana	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Acer rubrum	3		FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	66	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Osmundastrum cinnamomeum	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Polystichum acrostichoides	3		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Glyceria striata	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	16	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E-30-UPL

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: E-30-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 15-20%
 Subregion (LRR or MLRA): LRR Lat: 42.62571 Long: -72.19778 Datum: _____
 Soil Map Unit: Charlton-Paxton association, 15 to 45 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_5/8	95	10YR_3/3	5	C	M	LOAM	Auger refusal at 8in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Gravel</u>		Hydric Soil Present?	<u>No</u>
Depth (inches): <u>10</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: E-30-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Spiraea alba</i>	38	X	FACW	
2. <i>Rubus pensilvanicus</i>	20.5	X	FACU	
3. <i>Liquidambar styraciflua</i>	10.5		FAC	
4. <i>Frangula alnus</i>	10.5		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
	79	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Dennstaedia punctilobula</i>	63	X	UPL	
2. <i>Solidago rugosa</i>	10.5		FAC	
3. <i>Pteridium aquilinum</i>	10.5		FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	84	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 3 (B)

% Dominants OBL, FACW, FAC: 33.33% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	0.0	x 1 = 0.0
FACW	38.0	x 2 = 76.0
FAC	31.5	x 3 = 94.5
FACU	31.0	x 4 = 124.0
UPL	63.0	x 5 = 315.0
Sum:	163.5 (A)	609.5 (B)

Prevalence Index = B/A = 3.73

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? No

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

E-30-WET

Project Site: A1B2 City/County: Athol / Worcester State: MA Samp. Date: 11/4/2020
 Applicant/Owner: National Grid Section, Township, Range: N/A Sampling Point: E-30-WET
 Investigator(s): C. Cyrus Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.62564 Long: -72.19766 Datum: _____
 Soil Map Unit: Charlton-Paxton association, 15 to 45 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? <u>X</u> Depth (inches): <u>Surface</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR_2/2	90	10YR_4/3	10	C	M	GRAVELLY_LOAM	Auger refusal at 10in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>10</u>	Hydric Soil Present? <u>Yes</u>
Remarks: Indicator F6 (Redox Dark Surface) present and soil meets NTCHS definition of hydric soil; parameter is met.	

VEGETATION - Use scientific names of plants.



Sampling Point: E-30-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>120.5</u> x 2 = <u>241.0</u> FAC <u>3.0</u> x 3 = <u>9.0</u> FACU <u>0.0</u> x 4 = <u>0.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>123.5</u> (A) <u>250.0</u> (B) Prevalence Index = B/A = <u>2.02</u>
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Spiraea alba</i>	38	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Frangula alnus</i>	3		FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>41</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Dichanthelium clandestinum</i>	38	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Osmundastrum cinnamomeum</i>	20.5	X	FACW	
3. <i>Onoclea sensibilis</i>	10.5		FACW	
4. <i>Solidago gigantea</i>	10.5		FACW	
5. <i>Symphytotrichum novae-angliae</i>	3		FACW	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>82</u> = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-92/G-93-UPL

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 11/4/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-92/G-93-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 12-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.62291 Long: -72.19884 Datum: WGS 1984
 Soil Map Unit: Charlton-Paxton association, 15 to 45 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? <u> </u> Depth (inches): <u>N/A</u> Water Table Present? <u> </u> Depth (inches): <u>N/A</u> Saturation Present? <u> X </u> Depth (inches): <u>14</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: <u>Only one secondary indicator of wetland hydrology is present; parameter is met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	10YR_2/1	100		N/A	N/A	N/A	LOAM	Auger refusal at 14in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>14</u>		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-92/G-93-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Lyonia ligustrina</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				Definitions of Vegetation Strata:
	<u>38</u>	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: <u>5 ft</u>)				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
1. <i>Osmundastrum cinnamomeum</i>	38	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
2. <i>Dryopteris intermedia</i>	20.5	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. <i>Quercus rubra</i>	10.5		FACU	Woody vine - All woody vines, regardless of height.
4. <i>Dendrolycopodium obscurum</i>	3		FACU	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>72</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-92-WET

Project Site: A1B2 City/County: Athol / Worcester State: MA Samp. Date: 11/4/2020
 Applicant/Owner: National Grid Section, Township, Range: Royalston Sampling Point: G-92-WET
 Investigator(s): E. Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.62308 Long: -72.19875 Datum: WGS 1984
 Soil Map Unit: Woodbridge-Paxton association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR_4/1	95	10YR_4/6	5	C	M	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-92-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				
1. <i>Acer rubrum</i>	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 4 (A) # Dominants across all strata: 6 (B) % Dominants OBL, FACW, FAC: 66.67% (A/B)
2.				
3.				
4.				
5.				
6.				
7.				
8.				
	10	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. <i>Acer rubrum</i>	10.5	X	FAC	Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <i>Fagus grandifolia</i>	3	X	FACU	
3.				
4.				
5.				
6.				
7.				
8.				
	13	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Lyonia ligustrina</i>	38	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Rosa multiflora</i>	20.5	X	FACU	
3.				
4.				
5.				
6.				
7.				
8.				
	58	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Onoclea sensibilis</i>	38	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Spiraea alba</i>	3		FACW	
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
	41	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1.				Hydrophytic Vegetation Present? Yes
2.				
3.				
4.				
5.				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-93-WET

Project Site: A1B2 City/County: Athol / Worcester State: MA Samp. Date: 11/4/2020
 Applicant/Owner: National Grid Section, Township, Range: N/A Sampling Point: G-93-WET
 Investigator(s): C. Cyrus Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 12-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.62276 Long: -72.19887 Datum: WGS 1984
 Soil Map Unit: Charlton-Paxton association, 15 to 45 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: Drought conditions
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/1	100		N/A	N/A	N/A	MUCK	Auger refusal at 8in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>	Depth (inches): <u>8</u>	<u>Yes</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-93-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Alnus incana</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Fraxinus pennsylvanica</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Dryopteris intermedia</i>	10.5		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	73	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-94-UPL

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 9/23/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-94-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Undulating Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.60952 Long: -72.20717 Datum: WGS 1984
 Soil Map Unit: Paxton fine sandy loam, 8 to 15 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	

Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-13	10YR_3/4	100		N/A	N/A	N/A	LOAM	
13-15	10YR_3/3	90		N/A	N/A	N/A	SANDY_LOAM	
15-20	10YR_4/2	80		N/A	N/A	N/A	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-94-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>0</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>0.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)					Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	Rubus idaeus	38	X	FACU	
2.	Rosa multiflora	20.5	X	FACU	
3.					
4.					
5.					
6.					
7.					
8.					
		<u>58</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	Solidago canadensis	38	X	FACU	
2.	Rubus flagellaris	10.5		FACU	
3.	Solidago rugosa	10.5		FAC	
4.	Onoclea sensibilis	3		FACW	
5.	Calamagrostis canadensis	3		OBL	
6.	Arisaema triphyllum	3		FAC	
7.	Clematis_SP	3		NULL	
8.	Symphotrichum novae-angliae	3		FACW	
9.					
10.					
11.					
12.					
		<u>74</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)					Hydrophytic Vegetation Present? <u>No</u>
1.	Celastrus orbiculatus	10.5		UPL	
2.					
3.					
4.					
5.					
		<u>10</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-94-WET

Project Site: A1B2 City/County: Athol / Worcester State: MA Samp. Date: 9/23/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-94-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 5-8%WGS
 Subregion (LRR or MLRA): LRR R Lat: 42.60958 Long: -72.20692 Datum: 1984
 Soil Map Unit: Paxton fine sandy loam, 8 to 15 percent slopes NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: Drought conditions
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:
 Surface Water Present? Depth (inches): N/A
 Water Table Present? Depth (inches): N/A
 Saturation Present? X Depth (inches): Surface

Wetland Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: At least one primary indicator or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR_2/1	100		N/A	N/A	N/A	MUCK	Refusal at 7

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: Rock
 Depth (inches): 7

Hydric Soil Present? Yes

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-94-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>9</u> (A)
2. _____				# Dominants across all strata: <u>10</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>90.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. Acer saccharinum	10.5	X	FACW	OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				
	<u>10</u>	= Total Cover		Prevalence Index = B/A = _____
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. Acer rubrum	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Frangula alnus	10.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Alnus incana	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Lyonia ligustrina	10.5	X	FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. Cornus amomum	10.5	X	FACW	<input type="checkbox"/> Morphological Adaptations
6. Rosa multiflora	10.5	X	FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. Spiraea alba	10.5	X	FACW	
8. Betula lenta	3		FACU	
	<u>76</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Dichanthelium clandestinum	38	X	FACW	
2. Lysimachia terrestris	20.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Osmundastrum cinnamomeum	10.5		FACW	
4. Solidago gigantea	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
5. Onoclea sensibilis	10.5		FACW	
6. Carex lurida	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. Rubus hispidus	10.5		FACW	
8. Thelypteris palustris	3		FACW	Woody vine - All woody vines, regardless of height.
9. _____				
10. _____				
11. _____				
12. _____				
	<u>114</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) is present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-95-UPL

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 9/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-95-UPL
 Investigator(s): C. Cyrus, J. Petersen Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.60925 Long: -72.20730 Datum: WGS 1984
 Soil Map Unit: Charlton-Paxton association, 15 to 45 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_3/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Very bouldery

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Bedrock</u>		Hydric Soil Present?	<u>No</u>
Depth (inches): <u>6</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-95-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 8 (B)
3. _____				% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%
1. Frangula alnus	10.5	X	FAC	_____ Prevalence Index is <= 3.0
2. Lyonia mariana	3	X	FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. Quercus rubra	3	X	FACU	_____ Rapid Test for Hydrophytic Vegetation
4. Acer rubrum	3	X	FAC	_____ Morphological Adaptations
5. Kalmia latifolia	3	X	FACU	
6. Rosa multiflora	3	X	FACU	
7. _____				
8. _____				
	25	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Solidago rugosa	38	X	FAC	
2. Doellingeria umbellata	10.5		FACW	
3. Lysimachia quadrifolia	3		FACU	
4. Eutrochium purpureum	3		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	54	= Total Cover		Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
Woody Vines (Plot size: 30 ft)				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
1. Celastrus orbiculatus	3		UPL	
2. _____				
3. _____				
4. _____				
5. _____				
	3	= Total Cover		Woody vine - All woody vines, regardless of height.
				Hydrophytic Vegetation Present? No

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-95-WET

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 9/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-95-WET
 Investigator(s): C. Cyrus, J. Petersen Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%WGS
 Subregion (LRR or MLRA): LRR R Lat: 42.60920 Long: -72.20758 Datum: 1984
 Soil Map Unit: Charlton-Paxton association, 15 to 45 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Localized inundation to 0.5inch			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/2	100		N/A	N/A	N/A	MUCK	Boulders

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Boulder</u> Depth (inches): <u>6</u>		Hydric Soil Present? <u>Yes</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-95-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Cornus racemosa</i>	38	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	3		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	44	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Doellingeria umbellata</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Eutrochium purpureum</i>	10.5		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Lythrum salicaria</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Onoclea sensibilis</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	65	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-99-UPL

Project Site: A1/B2 City/County: Athol / Worcester State: MA Samp. Date: 8/19/2020
 Applicant/Owner: National Grid Sampling Point: G-99-UPL
 Investigator(s): J. Peterson and C. Cyrus Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
 Subregion (LRR or MLRA): Lat: 42.34736 Long: -71.14029 Datum:
 Soil Map Unit: Woodbridge-Paxton, 3-15% slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility ROW
 Are Vegetation No, Soil No, or Hydrology naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	No	Is This Sample Area Within a Wetland?	No
Hydric Soil Present?	-		
Wetland Hydrology Present?	No		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): N/A	No	
Water Table Present?	Depth (inches): N/A		
Saturation Present?	Depth (inches): N/A		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:		-	
Depth (inches):			
Remarks: Soil data not available due to rock refusal			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-99-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. Acer rubrum	10.5	X	FAC	OBL 0.0 x 1 = 0.0
2. Hamamelis virginiana	10.5	X	FACU	FACW 0.0 x 2 = 0.0
3. _____				FAC 97.0 x 3 = 291.0
4. _____				FACU 21.0 x 4 = 84.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 118.0 (A) 375.0 (B)
7. _____				Prevalence Index = B/A = 3.18
8. _____				
21 = Total Cover				Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
0 = Total Cover				Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Toxicodendron radicans	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Osmunda claytoniana	38	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Gaultheria procumbens	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Parathelypteris noveboracensis	10.5		FAC	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
97 = Total Cover				Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-99-WET

Project Site: A1/B2 City/County: Athol / Worcester State: MA Samp. Date: 8/19/2019
 Applicant/Owner: National Grid Sampling Point: G-99-WET
 Investigator(s): J. Peterson and C. Cyrus Section, Township, Range: Athol
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): R Lat: 42.62355 Long: -72.23851 Datum: _____
 Soil Map Unit: Woodbridge-Paxton, 3-15% slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u>No</u> Depth (inches): _____	<u>Yes</u>	
Water Table Present?	<u>No</u> Depth (inches): _____		
Saturation Present?	<u>Yes</u> Depth (inches): <u>2</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_2/2	100		N/A	N/A	N/A	MUCK	Rock refusal at 4 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input checked="" type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>4</u>			
Remarks: Hydric soil indicator was not able to be determined based on shallow soils/rock refusal at four inches. Hydric soil presumed to be present based on mucky mineral soil			

VEGETATION - Use scientific names of plants.



Sampling Point: G-99-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>23.5</u> x 1 = <u>23.5</u> FACW <u>83.0</u> x 2 = <u>166.0</u> FAC <u>3.0</u> x 3 = <u>9.0</u> FACU <u>0.0</u> x 4 = <u>0.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>109.5</u> (A) <u>198.5</u> (B) Prevalence Index = B/A = <u>1.81</u>
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	Salix sericea	20.5	X	OBL	
2.	Cornus amomum	10.5	X	FACW	
3.	Frangula alnus	3		FAC	
4.	Spiraea alba	3		FACW	
5.					
6.					
7.					
8.					
		<u>37</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	Osmundastrum cinnamomeum	38	X	FACW	
2.	Onoclea sensibilis	10.5		FACW	
3.	Symphytichum novae-angliae	10.5		FACW	
4.	Rubus hispidus	10.5		FACW	
5.	Eutrochium maculatum	3		OBL	
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		<u>72</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)					Hydrophytic Vegetation Present? <u>Yes</u>
1.					
2.					
3.					
4.					
5.					
		<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland AT-W23

G-97-UPL

Project Site: A1B2 City/County: Athol / Worcester Samp. Date: 9/25/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-97-UPL
Investigator(s): C. Cyrus, J. Petersen Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.60110 Long: -72.21242 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand, 25 to 35 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
Saturation (A3)
Water Marks (B1)
X Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C5)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-2 10YR_3/3 100 N/A N/A N/A FINE_SANDY_LOAM
2-4 10YR_6/1 100 N/A N/A N/A FINE_SAND
4-9 10YR_2/2 100 N/A N/A N/A FINE_SANDY_LOAM
9-14 10YR_4/6 100 N/A N/A N/A FINE_SANDY_LOAM
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Wood
Depth (inches): 14
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-97-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. <i>Acer rubrum</i>	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 3 (A) # Dominants across all strata: 6 (B) % Dominants OBL, FACW, FAC: 50.00% (A/B)	
2. <i>Ulmus americana</i>	3	X	FACW		
3.					
4.					
5.					
6.					
7.					
8.					
	13	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. <i>Prunus americana</i>	3	X	UPL	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <i>Amelanchier arborea</i>	3	X	FACU		
3. <i>Corylus americana</i>	3	X	FACU		
4.					
5.					
6.					
7.					
8.					
	9	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. <i>Parathelypteris noveboracensis</i>	85.5	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Symphytichum pilosum</i>	3		FACU		
3. <i>Doellingeria umbellata</i>	3		FACW		
4. <i>Solidago rugosa</i>	3		FAC		
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
	94	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1.				Hydrophytic Vegetation Present? <u> No </u>	
2.					
3.					
4.					
5.					
	0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-97-WET

Project Site: A1B2 City/County: Athol / Worcester State: MA Samp. Date: 9/25/2020
 Applicant/Owner: National Grid Section, Township, Range: N/A Sampling Point: G-97-WET
 Investigator(s): C. Cyrus, J. Peterson Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.60111 Long: -72.21248 Datum: WGS 1984
 Soil Map Unit: Hinckley loamy sand, 25 to 35 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: ORs are in the top 3 inches			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	2.5Y_3/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rippowam soil series
3-5	2.5Y_3/1	90	7.5YR_4/4	10	C	M,PL	FINE_SANDY_LOAM	
5-14	2.5Y_4/1	85	10YR_4/4	15	C	PL	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed): Type: <u>Wood</u> Depth (inches): <u>14</u>		Hydric Soil Present? <u>Yes</u>	
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: G-97-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 83.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Cornus amomum	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	3	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Eutrochium maculatum	20.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Onoclea sensibilis	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Solidago rugosa	10.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Symphyotrichum novae-angliae	10.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Athyrium asplenoides	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	55	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. Clematis terniflora	3		UPL	_____ Yes
2. _____				
3. _____				
4. _____				
5. _____				
	3	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.

Winchendon, Massachusetts Forms

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WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W1

G-32-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-32-UPL
Investigator(s): C. Cyrus, N. Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.64422 Long: -72.11535 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_3/2 100 N/A N/A N/A SILT_LOAM
3-18 10YR_4/6 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-32-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		
		<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W1

G-32-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-32-WET
Investigator(s): C. Cyrus, N. Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.64416 Long: -72.11524 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C5)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
X Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Sphagnum present throughout
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-12 10YR_2/1 100 N/A N/A N/A MUCK
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histlic Epipedon (A2)
Black Histlic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 12
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-32-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Spiraea alba	10.5		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Acer rubrum	0		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	73	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus hispidus	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	10	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

W-30-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: W-30-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.64187 Long: -72.11430 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_2/1 100 N/A N/A N/A SILT_LOAM
2-4 7.5YR_2.5/1 70 10YR_7/3 30 N/A N/A SILT_LOAM Mixed matrix
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? No
Depth (inches): 4
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: W-30-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	38	X	FAC	_____ Dominance Test is > 50%
2. <i>Juniperus communis</i>	20.5	X	FACU	_____ Prevalence Index is <= 3.0
3. <i>Gaylussacia baccata</i>	20.5	X	FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	79	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus hispidus</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Trientalis borealis</i>	0		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	51	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-30-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-30-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
Subregion (LRR or MLRA): LRR R Lat: 42.64178 Long: -72.11432 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
X Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): 8
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Historically impounded
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-12 10YR_2/1 100 N/A N/A N/A MUCK Unconsolidated below 12 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks: Soil is unconsolidated below 12 inches.
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-30-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. Ilex verticillata	98	X	FACW	
2. Spiraea alba	3		FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>101</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. Rubus hispidus	3	X	FACW	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>3</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-28/29-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-28/29-UPL
Investigator(s): C. Cyrus, N. Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.64095 Long: -72.11361 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-1 10YR_2/2 100 N/A N/A N/A N/A SILT_LOAM
1-18 10YR_5/6 80 10YR_4/4 20 C M SILT_LOAM
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-28/29-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____	_____	_____	_____	# Dominants across all strata: <u>3</u> (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: <u> </u> Multiply By: <u> </u>
2. _____	_____	_____	_____	OBL <u> </u> x 1 = <u> </u>
3. _____	_____	_____	_____	FACW <u> </u> x 2 = <u> </u>
4. _____	_____	_____	_____	FAC <u> </u> x 3 = <u> </u>
5. _____	_____	_____	_____	FACU <u> </u> x 4 = <u> </u>
6. _____	_____	_____	_____	UPL <u> </u> x 5 = <u> </u>
7. _____	_____	_____	_____	Sum: <u> </u> (A) <u> </u> (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = <u> </u>
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	38	X	FAC	<u> </u> Dominance Test is > 50%
2. <i>Juniperus communis</i>	38	X	FACU	<u> </u> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	10.5		FAC	<u> </u> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Spiraea alba</i>	3		FACW	<u> </u> Rapid Test for Hydrophytic Vegetation
5. <i>Pinus strobus</i>	0		FACU	<u> </u> Morphological Adaptations
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	89	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Cornus canadensis</i>	10.5		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Gaultheria procumbens</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Onoclea sensibilis</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Athyrium asplenoides</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. <i>Rubus hispidus</i>	3		FACW	
7. <i>Solidago caesia</i>	3		FACU	
8. <i>Lysimachia_SP</i>	0		NULL	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	71	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u> </u> No
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-28-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-28-WET
Investigator(s): C. Cyrus, N. Newberry Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.64105 Long: -72.11374 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Did not apply geomorphic position as it appears to be a historically dug out area. Sphagnum present throughout wetland.
Remarks: At least one primary and two secondary indicators of wetland hydrology; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
(in) Color (moist) % Color (moist) % Type1 Loc2
0-8 10YR_3/1 97 10YR_3/6 3 C M GRAVELLY_SANDY_LOA 4 inch of organic matter above mineral layer
M
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 8
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-28-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>5</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Spiraea alba</i>	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Acer rubrum</i>	10.5	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Ilex verticillata</i>	10.5	X	FACW	<input type="checkbox"/> Morphological Adaptations
5. <i>Quercus rubra</i>	0		FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>52</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Thelypteris palustris</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Carex folliculata</i>	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Onoclea sensibilis</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Rubus hispidus</i>	3		FACW	Woody vine - All woody vines, regardless of height.
5. <i>Scirpus cyperinus</i>	0		OBL	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>19</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-29-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-29-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
Subregion (LRR or MLRA): LRR R Lat: 42.64105 Long: -72.11365 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
X Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Geomorphic position not applied because it appears historically dug out. Sphagnum present throughout wetland.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_3/3 100 N/A N/A N/A N/A LOAM
3-12 10YR_3/1 97 10YR_3/6 3 C M GRAVELLY_SANDY_LOA
M
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 12
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-29-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Spiraea alba</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Acer rubrum</i>	0		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Pinus strobus</i>	0		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				Definitions of Vegetation Strata:
	<u>38</u>	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: <u>5 ft</u>)				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
1. <i>Onoclea sensibilis</i>	63	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
2. <i>Typha latifolia</i>	20.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	Woody vine - All woody vines, regardless of height.
4. <i>Nasturtium officinale</i>	10.5		OBL	
5. <i>Scirpus cyperinus</i>	3		OBL	
6. <i>Persicaria pensylvanica</i>	3		FACW	
7. <i>Rubus hispidus</i>	3		FACW	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>113</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

200901WFF5 upland

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 9/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: 200901WFF5 upland
 Investigator(s): DCR DMH Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.63882 Long: -72.11246 Datum: _____
 Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions present
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions present
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR_3/4	60	10YR_5/8	40	C	M	SAND	
12=		100		N/A	N/A	N/A		
rock refusal								

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Bedrock/gravel</u> Depth (inches): <u>12</u>		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: 200901WFF5 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>2</u> x 4 = <u>8</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>5</u> (A) <u>16</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.03</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	10.5	X	FAC	<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>10</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Gaultheria procumbens</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Rubus flagellaris</i>	10.5	X	FACU	
3. <i>Danthonia_SP</i>	10.5	X	NULL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dichanthelium clandestinum</i>	3		FACW	
5. <i>Solidago rugosa</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
6. _____				
7. _____				Woody vine - All woody vines, regardless of height.
8. _____				
9. _____				Hydrophytic Vegetation Present? <u>Yes</u>
10. _____				
11. _____				
12. _____				
	<u>47</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (If observed, list morphological adaptations below). No hydrophytic vegetation indicators present; parameter is not met.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W4

200901WFF5

Project Site: A1B2 City/County: Winchendon / Worcester State: MA Sampling Point: 200901WFF5
Applicant/Owner: National Grid
Investigator(s): DCR DMH Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.63865 Long: -72.11257 Datum:
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? - Remarks: Drought conditions present
Are Normal Circumstances present? - If needed, explain any answers in Remarks: Drought conditions present
Are Vegetation, Soil, or Hydrology significantly disturbed? Remarks: Maintained ROW
Are Vegetation, Soil, or Hydrology naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Other

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_2/1 95 7.5YR_3/4 5 C M MUCKY_LOAM
4-16 10YR_4/2 60 10YR_5/2 40 D M SAND
16-20 7.5YR_3/3 100 N/A N/A N/A SAND
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) X Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:
Indicator F6 (Redox Dark Surface) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: 200901WFF5

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL 3 x 1 = 3
2. _____				FACW 5 x 2 = 10
3. _____				FAC 2 x 3 = 6
4. _____				FACU 0 x 4 = 0
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 10 (A) 19 (B)
7. _____				
8. _____				Prevalence Index = B/A = 1.75
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Ilex glabra	38	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
2. Ilex laevigata	38	X	OBL	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. Spiraea alba	38	X	FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. Rhododendron canadense	20.5		FACW	<input type="checkbox"/> Morphological Adaptations
5. Kalmia angustifolia	10.5		FAC	
6. Vaccinium corymbosum	10.5		FACW	
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____				Definitions of Vegetation Strata:
	155	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: 5 ft)				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
1. Rubus hispidus	63	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
2. Scirpus cyperinus	20.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. Carex folliculata	20.5		OBL	Woody vine - All woody vines, regardless of height.
4. Osmunda claytoniana	3		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	107	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

F-4-Upland

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F-4-Upland
 Investigator(s): C. Robertson, D. Hunter Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.63672 Long: -72.10858 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Other None
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Level 2 (significant) drought conditions present
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/1	100		N/A	N/A	N/A	LOAM	
2-4	10YR_4/1	100		N/A	N/A	N/A	FINE_SAND	
4-9	7.5YR_5/6	100		N/A	N/A	N/A	SAND	
9-20	2.5Y_6/8	100		N/A	N/A	N/A	SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: F-4-Upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 1 x 2 = 2
3. _____				FAC 3 x 3 = 9
4. _____				FACU 5 x 4 = 20
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 9 (A) 31 (B)
7. _____				Prevalence Index = B/A = 2.48
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	38	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Gaylussacia baccata</i>	20.5	X	FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Ilex glabra</i>	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Aronia melanocarpa</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	72	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Cornus canadensis</i>	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	20.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Rubus flagellaris</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Dendrolycopodium obscurum</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	135	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W6

F-4-Wetland

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: F-4-Wetland
Investigator(s): C. Robertson, D. Hunter Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.63662 Long: -72.10827 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Level 2 (significant) drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C5)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 18
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-1 10YR_2/1 100 N/A N/A N/A N/A MUCKY_LOAM
2-5 10YR_4/1 95 10YR_4/6 5 C M LOAMY_SAND
6-20 2.5Y_6/2 100 N/A N/A N/A SAND
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
X Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
X Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:
Indicator S5 (Sandy Redox) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: F-4-Wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 9 (A)
2. _____				# Dominants across all strata: 9 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 4 x 1 = 4
3. _____				FACW 5 x 2 = 10
4. _____				FAC 1 x 3 = 3
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 10 (A) 17 (B)
8. _____				Prevalence Index = B/A = 2.28
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex glabra</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Aronia prunifolia</i>	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Kalmia angustifolia</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	44	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Eriophorum angustifolium</i>	20.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Thelypteris palustris</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago uliginosa</i>	10.5	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Juncus effusus</i>	10.5	X	OBL	Woody vine - All woody vines, regardless of height.
6. <i>Carex folliculata</i>	10.5	X	OBL	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	83	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes _____
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

F-3-Upland

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F-3-Upland
 Investigator(s): C. Robertson, D. Hunter Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.63646 Long: -72.10546 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Other None
 Are climatic/hydrologic conditions on the site typical for this time of year? - Remarks: Level 2 (significant) drought conditions present
 Are Normal Circumstances present? No - If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil -, or Hydrology - significantly disturbed? Remarks: Maintained ROW
 Are Vegetation -, Soil -, or Hydrology - naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>-</u>	
Wetland Hydrology Present? <u>-</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>-</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	SANDY_LOAM	
3-12	7.5YR_4/6	100		N/A	N/A	N/A	LOAM	
12-20	10YR_6/6	92	7.5YR_5/8	8	C	M	SAND	spotic

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>-</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: F-3-Upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 0 x 2 = 0
4. _____				FAC 4 x 3 = 12
5. _____				FACU 4 x 4 = 16
6. _____				UPL 1 x 5 = 5
7. _____				Sum: 9 (A) 33 (B)
8. _____				Prevalence Index = B/A = 2.73
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	63	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium arboreum</i>	10.5		UPL	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Hamamelis virginiana</i>	10.5		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Viburnum lentago</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	87	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	85.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Cornus canadensis</i>	63	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus flagellaris</i>	38		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago rugosa</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	200	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W7

F-3-Wetland

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: F-3-Wetland
Investigator(s): C. Robertson, D. Hunter Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.63665 Long: -72.10521 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Level 2 (significant) drought conditions present
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? Yes
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Other

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-1 10YR_2/1 100 10YR_5/6 N/A N/A N/A MUCKY_LOAM o horizon
1-11 10YR_4/1 97 3 C M,PL SANDY_CLAY_LOAM
11-20 2.5Y_6/1 100 N/A N/A N/A SAND
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Hydric Soil Present? Yes
Depth (inches):
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: F-3-Wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 1 x 1 = 1
3. _____				FACW 4 x 2 = 8
4. _____				FAC 2 x 3 = 6
5. _____				FACU 1 x 4 = 4
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 8 (A) 19 (B)
8. _____				Prevalence Index = B/A = 2.66
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex glabra	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Spiraea alba	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Kalmia angustifolia	10.5	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Vaccinium corymbosum	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	44	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus hispidus	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Osmunda claytoniana	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Gaultheria procumbens	20.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Carex folliculata	20.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	142	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W8

F-2-Upland

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F-2-Upland
 Investigator(s): C. Robertson, D. Hunter Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Undulating Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.63680 Long: -72.09511 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 8 to 15 percent slopes NWI Class: Other None
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Level 2 (significant) drought conditions present
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary and only one secondary indicator of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	LOAM	spotic
3-6	2.5Y_5/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	spotic
6-14	7.5YR_4/6	100		N/A	N/A	N/A	LOAM	spotic
14		100		N/A	N/A	N/A		refusal rock

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>bedrock</u> Depth (inches): <u>14</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: F-2-Upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 25.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL 0 x 1 = 0
2. _____				FACW 1 x 2 = 2
3. _____				FAC 5 x 3 = 15
4. _____				FACU 3 x 4 = 12
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 9 (A) 29 (B)
7. _____				
8. _____				Prevalence Index = B/A = 2.83
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%
1. <i>Corylus americana</i>	38	X	FACU	X Prevalence Index is <= 3.0
2. <i>Kalmia angustifolia</i>	38	X	FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Spiraea tomentosa</i>	10.5		FACW	_____ Rapid Test for Hydrophytic Vegetation
4. <i>Viburnum dentatum</i>	3		FAC	_____ Morphological Adaptations
5. <i>Frangula alnus</i>	3		FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	92	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus flagellaris</i>	63	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Maianthemum canadense</i>	38	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Osmunda claytoniana</i>	20.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Parathelypteris noveboracensis</i>	10.5		FAC	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	132	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W8

F-2-Wetland

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F-2-Wetland
 Investigator(s): C. Robertson, D. Hunter Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.63678 Long: -72.09465 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 8 to 15 percent slopes NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Level 2 (significant) drought conditions present
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Other			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR_2/2	70	10YR_4/6	30	C	M,PL	SILT_LOAM	
7-9	10YR_5/1	100		N/A	N/A	N/A	SAND	
10-20	10YR_2/1	95	7.5YR_3/4	5	C	M	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: Indicator F6 (Redox Dark Surface) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: F-2-Wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 8 (A)
2. _____				# Dominants across all strata: 8 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <i>Alnus incana</i>	3	X	FACW	Total % Cover of: OBL 4 x 1 = 4
2. _____				FACW 5 x 2 = 10
3. _____				FAC 0 x 3 = 0
4. _____				FACU 0 x 4 = 0
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 9 (A) 14 (B)
7. _____				Prevalence Index = B/A = 2.60
8. _____				
	3	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Cornus amomum</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Cephalanthus occidentalis</i>	10.5		OBL	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	94	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Eutrochium maculatum</i>	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Calamagrostis canadensis</i>	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Thelypteris palustris</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Onoclea sensibilis</i>	10.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Carex crinita</i>	10.5	X	OBL	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	80	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W9

F-1-Upland

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
 Applicant/Owner: National Grid State: MA Sampling Point: F-1-Upland
 Investigator(s): C. Robertson, D. Hunter Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Other berm Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.63682 Long: -72.09450 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 8 to 15 percent slopes NWI Class: Other None
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Level 2 (significant) drought conditions present
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present? <u>No</u>	
Surface Water Present? _____	Depth (inches): <u>N/A</u>		
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary and only one secondary indicator of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR_3/3	85	7.5YR_4/6	15	C	M	SILT_LOAM	
7-12	10YR_2/1	100		N/A	N/A	N/A	SILT_LOAM	
12-20	10YR_4/6	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.								
² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :					
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)		
<input type="checkbox"/> Stratified Layers (A5)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)		
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)		
<input type="checkbox"/> Sandy Redox (S5)						<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)		
<input type="checkbox"/> Stripped Matrix (S6)						<input type="checkbox"/> Red Parent Material (F21)		
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)						<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
						<input type="checkbox"/> Other (Explain in Remarks)		
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed):						Hydric Soil Present? <u>No</u>		
Type: _____								
Depth (inches): _____								
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>								

VEGETATION - Use scientific names of plants.



Sampling Point: F-1-Upland

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.					Dominance Test Worksheet:	
2.					# Dominants OBL, FACW, FAC: 6 (A)	
3.					# Dominants across all strata: 6 (B)	
4.					% Dominants OBL, FACW, FAC: 100.00% (A/B)	
5.						
6.						
7.						
8.						
		0	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)					Total % Cover of: Multiply By:	
1.					OBL 1	x 1 = 1
2.					FACW 3	x 2 = 6
3.					FAC 2	x 3 = 6
4.					FACU 0	x 4 = 0
5.					UPL 0	x 5 = 0
6.					Sum: 6 (A)	13 (B)
7.					Prevalence Index = B/A = 2.71	
8.						
		0	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)					<input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations	
1.	Acer rubrum	38	X	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2.	Viburnum dentatum	20.5	X	FAC		
3.	Cornus amomum	20.5	X	FACW		
4.	Spiraea alba	20.5	X	FACW		
5.						
6.						
7.						
8.						
		99	= Total Cover		Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)					Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
1.	Onoclea sensibilis	10.5	X	FACW	Woody vine - All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes	
2.	Eutrochium maculatum	10.5	X	OBL		
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
		21	= Total Cover			
Woody Vines (Plot size: 30 ft)						
1.						
2.						
3.						
4.						
5.						
		0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W9

F-1-Wetland

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/31/2020
Applicant/Owner: National Grid State: MA Sampling Point: F-1-Wetland
Investigator(s): C. Robertson, D. Hunter Section, Township, Range:
Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): Concave Slope (%): 1-2%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) X Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-7 10YR_2/1 98 7.5YR_4/6 2 C M,PL LOAM
7-20 10YR_5/2 60 10YR_2/2 30 D M FINE_SANDY_LOAM
7.5YR_4/6 10 C M
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
X Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes

VEGETATION - Use scientific names of plants.



Sampling Point: F-1-Wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 2 x 1 = 2
3. _____				FACW 4 x 2 = 8
4. _____				FAC 1 x 3 = 3
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 7 (A) 13 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 2.74
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Spiraea alba	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Cornus amomum	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Acer rubrum	10.5		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	94	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Eutrochium maculatum	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Carex crinita	10.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Dichanthelium clandestinum	10.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Onoclea sensibilis	3		FACW	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	34	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.

depleted below dark surface, in conjunction with 2in of sandy redox



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W9

G-28-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-28-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.63677 Long: -72.09370 Datum: WGS 1984
Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: Other R2UBH
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
X Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 12
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-1 10YR_2/1 100 N/A N/A N/A SILT_LOAM
1-10 10YR_4/4 100 N/A N/A N/A SILT_LOAM
11-18 2.5Y_5/6 100 N/A N/A N/A SILTY_CLAY_LOAM
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-28-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	76	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmunda spectabilis</i>	20.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Symphytichum lateriflorum</i>	3		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	23	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W9

G-28-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/30/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-28-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Flat Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.63665 Long: -72.09398 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: Other R2UBH

Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>2</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <u>Rained previous day</u>			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	10YR_2/2	95	10YR_4/6	5	C	M	SANDY_LOAM	Unconsolidated below 14

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:		<u>Yes</u>	
Depth (inches):			
Remarks: Soil unconsolidated below 14 inches.			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-28-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>1</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Echinochloa muricata	63	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Carex crinita	10.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Juncus effusus	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Lysimachia X_SP	10.5		NULL	Woody vine - All woody vines, regardless of height.
5. Pontederia cordata	10.5		OBL	
6. Osmunda spectabilis	3		OBL	
7. Sium suave	3		OBL	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>111</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W10

G-27-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/30/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-27-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR R Lat: 42.63597 Long: -72.09132 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Other R2UBH
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR_3/3	90	10YR_2/1	10	C	M	SILT_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-27-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u> </u> Multiply By: <u> </u>
2. _____				OBL <u> </u> x 1 = <u> </u>
3. _____				FACW <u> </u> x 2 = <u> </u>
4. _____				FAC <u> </u> x 3 = <u> </u>
5. _____				FACU <u> </u> x 4 = <u> </u>
6. _____				UPL <u> </u> x 5 = <u> </u>
7. _____				Sum: <u> </u> (A) <u> </u> (B)
8. _____				Prevalence Index = B/A = <u> </u>
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	3	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Acer rubrum	3	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Pinus taeda	0		UPL	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>6</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Cornus canadensis	20.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	3		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Dendrolycopodium obscurum	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Quercus rubra	0		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Pteridium aquilinum	0		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>26</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W10

G-27-WET

Project Site: A1B2 City/County: Winchendon / Worcester State: MA Sampling Point: G-27-WET
Applicant/Owner: National Grid
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.63600 Long: -72.09130 Datum: WGS 184
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Other R2UBH
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C5)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
X Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained yesterday. A stream forms just off-site, but drainage patterns are observed through wetland to form channel.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_2/1 100 N/A N/A N/A N/A SILT_LOAM
2-18 10YR_3/2 80 10YR_6/2 20 D M SANDY_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
X Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-27-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Cornus amomum</i>	63	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Spiraea alba</i>	10.5		FACW	
3. <i>Acer rubrum</i>	3		FAC	
4. <i>Ilex verticillata</i>	3		FACW	
5. _____				
6. _____				
7. _____				
8. _____				
	<u>79</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Onoclea sensibilis</i>	20.5	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Impatiens capensis</i>	10.5	X	FACW	
3. <i>Thalictrum dioicum</i>	3		FACU	
4. <i>Carex crinita</i>	3		OBL	
5. <i>Solidago rugosa</i>	3		FAC	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>40</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		
Hydrophytic Vegetation Present? <u>Yes</u>				

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W11

G-26-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-26-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%
Subregion (LRR or MLRA): LRR R Lat: 42.63601 Long: -72.08047 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained yesterday.
Remarks:
No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_2/2 100 N/A N/A N/A N/A SILT_LOAM
3-6 10YR_5/2 100 N/A N/A N/A N/A SANDY_LOAM
6-14 10YR_4/6 100 N/A N/A N/A N/A SILT_LOAM
14-18 2.5Y_5/6 100 N/A N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Depth (inches): Hydric Soil Present? No
Remarks:
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-26-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Viburnum nudum</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Rhamnus cathartica</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	37	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Lysimachia X_SP</i>	63	X	NULL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Andropogon virginicus</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Gaultheria procumbens</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Pteridium aquilinum</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. <i>Solidago rugosa</i>	3		FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	93	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W11

G-26-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-26-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.63606 Long: -72.08029 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained yesterday
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-5 10YR_2/1 100 N/A N/A N/A N/A SILT_LOAM
5-6 10YR_2/2 100 N/A N/A N/A N/A GRAVELLY_SILT_LOAM
6-8 10YR_2/1 80 10YR_4/1 20 D M GRAVELLY_SILT_LOAM
8-12 10YR_4/1 95 10YR_4/4 5 C PL GRAVELLY_SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 12
Hydric Soil Present? Yes
Remarks: Combine F3 and F6 to meet thickness requirements

VEGETATION - Use scientific names of plants.



Sampling Point: G-26-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 7 (A)
2. _____				# Dominants across all strata: 7 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Frangula alnus</i>	20.5	X	FAC	_____ Dominance Test is > 50%
2. <i>Spiraea alba</i>	20.5	X	FACW	_____ Prevalence Index is <= 3.0
3. <i>Prunus virginiana</i>	10.5		FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Ilex verticillata</i>	3		FACW	_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				
7. _____				
8. _____				
	54	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Solidago rugosa</i>	10.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Juncus effusus</i>	10.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Cornus canadensis</i>	10.5	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	Woody vine - All woody vines, regardless of height.
6. <i>Euthamia graminifolia</i>	3		FAC	
7. <i>Thelypteris palustris</i>	3		FACW	
8. <i>Typha latifolia</i>	3		OBL	
9. <i>Chelone glabra</i>	0		OBL	
10. _____				
11. _____				
12. _____				
	89	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W12

G-25-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-25-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.63559 Long: -72.07919 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained yesterday
Remarks:
No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_2/1 100 N/A N/A N/A SILT_LOAM
2-18 10YR_4/6 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-25-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Kalmia angustifolia</i>	63	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Tsuga canadensis</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>69</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Gaultheria procumbens</i>	85.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Pteridium aquilinum</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Solidago rugosa</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Maianthemum canadense</i>	3		FACU	Woody vine - All woody vines, regardless of height.
5. <i>Rubus hispidus</i>	0		FACW	
6. <i>Lysimachia X_SP</i>	0		NULL	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>102</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W12

G-25-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/30/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-25-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.63557 Long: -72.07937 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Inundation to five inches observed outside of data plot.			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/1	100		N/A	N/A	N/A	MUCK	4 inches organic above mineral layer.
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.		
Hydric Soil Indicators:						Indicators for Problematic Hydric Soils ³ :		
<input checked="" type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)		
<input type="checkbox"/> Stratified Layers (A5)			<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)		
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)						<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)		
<input type="checkbox"/> Sandy Redox (S5)						<input type="checkbox"/> Red Parent Material (F21)		
<input type="checkbox"/> Stripped Matrix (S6)						<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)						<input type="checkbox"/> Other (Explain in Remarks)		
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed):						Hydric Soil Present?		
Type: <u>Gravel</u>						<u>Yes</u>		
Depth (inches): <u>2</u>								
Remarks:								

VEGETATION - Use scientific names of plants.



Sampling Point: G-25-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>6</u> (A)
2. _____				# Dominants across all strata: <u>6</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Viburnum nudum	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. Ilex verticillata	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. Acer rubrum	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. Spiraea alba	3		FACW	<input type="checkbox"/> Morphological Adaptations
5. _____				
6. _____				
7. _____				
8. _____				
	<u>37</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata:
1. Rubus hispidus	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Osmundastrum cinnamomeum	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Thelypteris palustris	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Eriophorum tenellum	10.5	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Typha latifolia	3		OBL	Woody vine - All woody vines, regardless of height.
6. Cornus canadensis	3		FAC	
7. Onoclea sensibilis	3		FACW	
8. Chelone glabra	3		OBL	
9. Trientalis borealis	0		FAC	
10. _____				
11. _____				
12. _____				
	<u>64</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W13

G-24-UPL

Project Site: A1B2 City/County: Winchendon / Worcester
Applicant/Owner: National Grid State: MA Sampling Point: G-24-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.63417 Long: -72.07545 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_2/2 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 4
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-24-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Vaccinium corymbosum</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Kalmia angustifolia</i>	20.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Hamamelis virginiana</i>	10.5		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Quercus rubra</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	72	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Kalmia angustifolia</i>	38	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Gaultheria procumbens</i>	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Cornus canadensis</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. <i>Dendrolycopodium obscurum</i>	3		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	95	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-24-WET

Project Site: A1B2 City/County: Winchendon / Worcester State: MA Sampling Point: G-24-WET
Applicant/Owner: National Grid
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%WGS
Subregion (LRR or MLRA): LRR R Lat: 42.63424 Long: -72.07524 Datum: 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained previous day.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type¹ Loc² Texture Remarks
0-2 10YR_2/1 100 N/A N/A N/A MUCK
¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils³:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 2
Hydric Soil Present? Yes
Remarks: Hydric soil indicator assumed to meet TF12 indicator based on refusal at 2 inches

VEGETATION - Use scientific names of plants.



Sampling Point: G-24-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1.	<i>Alnus serrulata</i>	38	X	OBL	
2.	<i>Spiraea alba</i>	38	X	FACW	
3.	<i>Ilex verticillata</i>	3		FACW	
4.	<i>Betula cordifolia</i>	0		FACU	
5.					
6.					
7.					
8.					
		79	= Total Cover		
Herb Stratum (Plot size: 5 ft)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Onoclea sensibilis</i>	85.5	X	FACW	
2.	<i>Rubus hispidus</i>	38	X	FACW	
3.	<i>Lysimachia X_SP</i>	20.5		NULL	
4.	<i>Athyrium asplenoides</i>	3		FAC	
5.	<i>Gentiana linearis</i>	3		FACW	
6.	<i>Impatiens capensis</i>	0		FACW	
7.					
8.					
9.					
10.					
11.					
12.					
		150	= Total Cover		
Woody Vines (Plot size: 30 ft)					Hydrophytic Vegetation Present? <u>Yes</u>
1.					
2.					
3.					
4.					
5.					
		0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W17

Wetland C40 (upland plot)

Project Site: A1/B2 Line City/County: Winchendon / Worcester Smp. Date: 6/25/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland C39 (upland plot)
Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Winchendon
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.63118 Long: -72.07184 Datum: NAD 83
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_4/4 100 N/A N/A N/A SAND With organics mixed in.
3-12 10YR_4/4 100 N/A N/A N/A SAND No organics mixed in.
12-15 10YR_2/2 100 N/A N/A N/A LOAMY_SAND
15-17 5YR_3/4 100 N/A N/A N/A SAND
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Rock Hydric Soil Present? No
Depth (inches): 17
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C39 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 3 x 2 = 6
4. _____				FAC 2 x 3 = 6
5. _____				FACU 1 x 4 = 4
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 6 (A) 16 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 2.98
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium angustifolium</i>	10.5	X	FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Rhododendron arborescens</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	27	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pyrola americana</i>	10.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	31	= Total Cover		Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (if observed, list morphological adaptations below).
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-40-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-40-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.63133 Long: -72.07198 Datum:
Soil Map Unit: NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_4/3 100 N/A N/A N/A N/A LOAMY_SAND
6-18 10YR_4/4 100 N/A N/A N/A N/A LOAMY_SAND
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-40-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 73.5 x 2 = 147.0
3. _____				FAC 0.0 x 3 = 0.0
4. _____				FACU 3.0 x 4 = 12.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 76.5 (A) 159.0 (B)
7. _____				Prevalence Index = B/A = 2.08
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Fraxinus americana</i>	3		FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	66	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	10	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W17

Wetland C39 (upland plot)

Project Site: A1/B2 Line City/County: Winchendon / Worcester Samp. Date: 6/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C39 (upland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Winchendon
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.63118 Long: -72.07184 Datum: NAD 83
 Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_4/4	100		N/A	N/A	N/A	SAND	With organics mixed in.
3-12	10YR_4/4	100		N/A	N/A	N/A	SAND	No organics mixed in.
12-15	10YR_2/2	100		N/A	N/A	N/A	LOAMY_SAND	
15-17	5YR_3/4	100		N/A	N/A	N/A	SAND	
		100		N/A	N/A	N/A		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>No</u>	
Depth (inches): <u>17</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C39 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 3 x 2 = 6
3. _____				FAC 2 x 3 = 6
4. _____				FACU 1 x 4 = 4
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 6 (A) 16 (B)
7. _____				Prevalence Index = B/A = 2.98
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium angustifolium</i>	10.5	X	FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Rhododendron arborescens</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	27	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pyrola americana</i>	10.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	31	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C39 (wetland plot)

Project Site: A1/B2 Line City/County: Winchendon / Worcester Samp. Date: 6/25/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland C39 (wetland plot)
Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Winchendon
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.63103 Long: -72.07182 Datum: NAD 83
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_3/2 100 N/A N/A N/A MUCK
4-6 10YR_4/2 100 N/A N/A N/A SAND
6-12 2.5Y_6/4 100 N/A N/A N/A Silty sand texture
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
X Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C39 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>1</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>4</u> x 2 = <u>8</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>0</u> x 4 = <u>0</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>4</u> (A) <u>8</u> (B)
7. _____				Prevalence Index = B/A = <u>2.74</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Salix alba	10.5		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Vaccinium corymbosum	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Spiraea alba	10.5		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>69</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. _____				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>0</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-37/38-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-37/38-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 20-25%
 Subregion (LRR or MLRA): LRR R Lat: 42.62814 Long: -72.07057 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Transmission ROW Gravel fill material
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_4/3	100		N/A	N/A	N/A	GRAVELLY_LOAM	Auger refusal at 4in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>4</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: C-37/38-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	20.5	X	FACU	_____ Dominance Test is > 50%
2. _____				_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	20	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Andropogon ternarius	85.5	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Dendrolycopodium obscurum	20.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Rubus flagellaris	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	116	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-38-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-38-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 25-30%
Subregion (LRR or MLRA): LRR R Lat: 42.62811 Long: -72.07072 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-8 10YR_3/1 100 N/A N/A N/A MUCKY_LOAM Auger refusal at 8in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
X Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 8
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-38-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Quercus rubra</i>	3		FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	41	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	85.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Glyceria striata</i>	3		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	88	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Indicator 1 (Rapid Test) is met with all dominant species across all strata FACW or wetter; parameter is met. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W19

C-37-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-37-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.62814 Long: -72.07047 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-8 10YR_3/1 100 N/A N/A N/A MUCKY_LOAM Auger refusal at 8in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
X Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 8
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-37-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Spiraea alba	63	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	63	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Osmundastrum cinnamomeum	85.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Athyrium asplenoides	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Solidago gigantea	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	99	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W20

C-36-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-36-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 12-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.62787 Long: -72.07026 Datum: WGS 1984
 Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_3/1	100		N/A	N/A	N/A	SANDY_LOAM	
2-12	10YR_4/3	100		N/A	N/A	N/A	SANDY_LOAM	Auger refusal at 12in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>		<u>No</u>	
Depth (inches): <u>12</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: C-36-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	10.5	X	FACU	_____ Dominance Test is > 50%
2. Rubus pensilvanicus	3	X	FACU	_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	13	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Pteridium aquilinum	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus flagellaris	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	101	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-36-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-36-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 3-5%WGS
Subregion (LRR or MLRA): LRR R Lat: 42.62790 Long: -72.07017 Datum: 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PFO
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? No
Remarks: All parameters are met. Area is classified as a palustrine forested (PFO) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
X Surface Water (A1) Water-Stained Leaves (B9)
X High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? X Depth (inches): 1
Water Table Present? X Depth (inches): Surface
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_3/1 100 N/A N/A N/A MUCK Auger refusal at 2in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Cobble
Depth (inches): 2
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-36-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. <i>Tsuga canadensis</i>	85.5	X	FAC	# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	85	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. <i>Tsuga canadensis</i>	10.5	X	FAC	OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				
	10	= Total Cover		Prevalence Index = B/A = _____
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators:
1. <i>Tsuga canadensis</i>	10.5	X	FAC	_____ Dominance Test is > 50%
2. _____				_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	10	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Osmundastrum cinnamomeum</i>	63	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Mitchella repens</i>	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Carex scabrata</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	86	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W36

C-35-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-35-UPL
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.62237 Long: -72.06724 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_6/2 100 N/A N/A N/A N/A LOAMY_SAND
2-18 7.5YR_4/6 80 10YR_4/6 20 C M GRAVELLY_LOAMY_SA
ND
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-35-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <i>Kalmia angustifolia</i>	85.5	X	FAC	
2. <i>Acer saccharum</i>	10.5		FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>96</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Rubus flagellaris</i>	85.5	X	FACU	
2. <i>Pteridium aquilinum</i>	10.5		FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>96</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-35-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-35-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.62243 Long: -72.06744 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): 3
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-18 10YR_3/2 100 N/A N/A N/A MUCK
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-35-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Spiraea alba	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Lyonia ligustrina	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	79	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Osmundastrum cinnamomeum	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	10	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
				Hydrophytic Vegetation Present? <input type="checkbox"/> Yes

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) present with all dominant species across all strata FACW or wetter. Parameter is met. Dominance test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-35B-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-35B-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.62247 Long: -72.06724 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
X High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): 4
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-18 10YR_3/1 100 N/A N/A N/A N/A MUCK
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histlic Epipedon (A2) MLRA 149B)
Black Histlic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-35B-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	3		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	41	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Glyceria canadensis</i>	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Carex crinita</i>	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	79	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) is present with all dominant species across all strata FACW or wetter. Parameter is met. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W14

G-23-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-23-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.63288 Long: -72.06978 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained yesterday
Remarks:
No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/2 100 N/A N/A N/A SILT_LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 6
Remarks:
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-23-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Viburnum nudum</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Kalmia angustifolia</i>	38	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Ilex verticillata</i>	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	89	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Dichanthelium dichotomum</i>	3		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Carex gracillima</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Acer rubrum</i>	0		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	72	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W14

G-23-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-23-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained previous day. Did not include geomorphic position due to influence of stone wall along one wetland edge.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_2/1 100 N/A N/A N/A MUCKY_LOAM 2 inches of organic material
3-4 10YR_4/2 100 N/A N/A N/A GRAVELLY_SANDY_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 4
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-23-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____	_____	_____	_____	# Dominants across all strata: <u>5</u> (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: <u>80.00%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: <u> </u> Multiply By: <u> </u>
2. _____	_____	_____	_____	OBL <u> </u> x 1 = <u> </u>
3. _____	_____	_____	_____	FACW <u> </u> x 2 = <u> </u>
4. _____	_____	_____	_____	FAC <u> </u> x 3 = <u> </u>
5. _____	_____	_____	_____	FACU <u> </u> x 4 = <u> </u>
6. _____	_____	_____	_____	UPL <u> </u> x 5 = <u> </u>
7. _____	_____	_____	_____	Sum: <u> </u> (A) <u> </u> (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = <u> </u>
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium corymbosum</i>	10.5		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Kalmia angustifolia</i>	10.5		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>65</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Lysimachia_SP</i>	10.5	X	NULL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Cornus canadensis</i>	10.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Carex folliculata</i>	10.5	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Scirpus cyperinus</i>	3		OBL	Woody vine - All woody vines, regardless of height.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>55</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-21-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-21-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.63290 Long: -72.06503 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: Drought conditions
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained yesterday.
Remarks:
No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type¹ Loc² Texture Remarks
0-14 10YR_4/4 100 N/A N/A N/A SILT_LOAM
¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? No
Depth (inches): 14
Remarks:
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-21-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: 0 (A)
2. _____	_____	_____	_____	# Dominants across all strata: 6 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <i>Picea rubens</i>	10.5	X	FACU	Total % Cover of: Multiply By:
2. _____	_____	_____	_____	OBL _____ x 1 = _____
3. _____	_____	_____	_____	FACW _____ x 2 = _____
4. _____	_____	_____	_____	FAC _____ x 3 = _____
5. _____	_____	_____	_____	FACU _____ x 4 = _____
6. _____	_____	_____	_____	UPL _____ x 5 = _____
7. _____	_____	_____	_____	Sum: _____ (A) _____ (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = _____
	10	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Elaeagnus angustifolia</i>	20.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Picea rubens</i>	10.5	X	FACU	_____ Prevalence Index is <= 3.0
3. <i>Populus tremuloides</i>	3		FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Rhamnus cathartica</i>	0		FAC	_____ Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	_____ Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	34	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Festuca rubra</i>	98	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Doellingeria umbellata</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Achillea millefolium</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago canadensis</i>	3		FACU	
6. <i>Salix bebbiana</i>	0		FACW	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	145	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. <i>Celastrus orbiculatus</i>	3		UPL	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	3	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W15

G-21-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-21-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.63294 Long: -72.06521 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) X Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained previous day. Wetland appears entirely surface water run-off driven
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_5/2 95 10YR_4/6 5 C PL SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-21-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <i>Acer rubrum</i>	3	X	FAC	Total % Cover of: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B)
2. _____				Prevalence Index = B/A = _____
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	3	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Viburnum dentatum</i>	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations
2. <i>Populus tremuloides</i>	10.5	X	FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. <i>Ilex verticillata</i>	3		FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	34	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Typha latifolia</i>	63	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Onoclea sensibilis</i>	63	X	FACW	
3. <i>Solidago gigantea</i>	20.5		FACW	
4. <i>Glyceria canadensis</i>	10.5		OBL	
5. <i>Scirpus cyperinus</i>	3		OBL	
6. <i>Juncus effusus</i>	3		OBL	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	163	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W24

G-16-UPL

Project Site: A1B2 City/County: Warwick / Franklin Samp. Date: 11/4/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-16-UPL
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.71567 Long: -72.36641 Datum: WGS 1983
Soil Map Unit: Montauk fine sandy loam, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-8 10YR_4/4 100 N/A N/A N/A LOAM Auger refusal at 8in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 8
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-16-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	20.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Juniperus communis</i>	20.5	X	FACU	_____ Prevalence Index is <= 3.0
3. <i>Spiraea alba</i>	3		FACW	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	44	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	38	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	10.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Cornus canadensis</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	54	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W24

G-16-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 11/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-16-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
Subregion (LRR or MLRA): LRR R Lat: 42.63070 Long: -72.05413 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 8 to 15 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? Yes
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-12 10YR_2/1 100 N/A N/A N/A N/A LOAM
12-18 10YR_6/2 80 10YR_6/8 20 C M LOAM
1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-16-WET

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <i>Tsuga canadensis</i>	38	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>6</u> (B) % Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	38	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. <i>Tsuga canadensis</i>	10.5	X	FACU		
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	10	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <i>Ilex verticillata</i>	20.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <i>Kalmia angustifolia</i>	10.5	X	FAC		
3. <i>Lyonia ligustrina</i>	3		FACW		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	34	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <i>Rubus hispidus</i>	63	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Calamagrostis canadensis</i>	20.5	X	OBL		
3. <i>Thelypteris palustris</i>	3		FACW		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	86	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>	

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W22

G-20-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-20-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
Subregion (LRR or MLRA): LRR R Lat: 42.63253 Long: -72.06111 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_4/3 100 N/A N/A N/A SILT_LOAM
6-18 10YR_4/4 100 N/A N/A N/A SILT_LOAM
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-20-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Frangula alnus</i>	98	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Rosa multiflora</i>	3		FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	101	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	20.5	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Onoclea sensibilis</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Symphytichum lateriflorum</i>	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Quercus rubra</i>	0		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	34	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W22

G-20-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-20-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%WGS
Subregion (LRR or MLRA): LRR Lat: 42.63248 Long: -72.06092 Datum: 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial (B7) Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C5) Thin Muck Surface (C7) Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial (C9) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Wetland appears to be entirely fed by surface water run-off.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_3/2 95 10YR_3/6 5 C M SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
X Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-20-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Ilex verticillata</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Frangula alnus</i>	38	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Lyonia ligustrina</i>	10.5		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Morphological Adaptations
5. <i>Acer rubrum</i>	3		FAC	
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>92</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Onoclea sensibilis</i>	85.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Solidago gigantea</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Pteridium aquilinum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Symphotrichum lateriflorum</i>	3		FAC	Woody vine - All woody vines, regardless of height.
5. <i>Epilobium coloratum</i>	0		OBL	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>102</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W25

G-17-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-17-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
Subregion (LRR or MLRA): LRR R Lat: 42.63044 Long: -72.05389 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained previous day.
Remarks:
No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_2/2 100 N/A N/A N/A SILT_LOAM Some organic matter intermixed.
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 4
Remarks:
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-17-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>80.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Kalmia angustifolia</i>	20.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Spiraea alba</i>	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Acer rubrum</i>	10.5	X	FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Betula cordifolia</i>	3		FACU	<input type="checkbox"/> Morphological Adaptations
5. <i>Quercus rubra</i>	0		FACU	
6. _____				
7. _____				
8. _____				
	<u>44</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus hispidus</i>	85.5	X	FACW	
2. <i>Pteridium aquilinum</i>	63	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Gaultheria procumbens</i>	38		FACU	
4. <i>Cornus canadensis</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
5. <i>Danthonia sericea</i>	3		FACU	
6. <i>Acer rubrum</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. <i>Dichanthelium dichotomum</i>	0		FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>203</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-19-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-19-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.63240 Long: -72.06021 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained previous night.
Remarks:
No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_3/3 50 10YR_2/1 50 N/A N/A SILT_LOAM 2 inches organic material on top. Mixed matrix.
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Bed rock Hydric Soil Present? No
Depth (inches): 2
Remarks:
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-19-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	20.5	X	FAC	_____ Dominance Test is > 50%
2. <i>Quercus rubra</i>	0		FACU	_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	20	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaylussacia baccata</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Quercus rubra</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Acer rubrum</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	85	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-19-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-19-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.63242 Long: -72.06012 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Powerline ROW; impounded lake
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-4 10YR_2/1 80 10YR_4/4 20 C M MUCKY_LOAM Soils significantly disturbed.
4-5 10YR_3/6 100 N/A N/A N/A GRAVELLY_SILT_LOAM
5-16 10YR_2/1 70 10YR_4/3 30 C M GRAVELLY_SILT_LOAM
16-18 10YR_5/2 60 10YR_4/6 40 C M GRAVELLY_SANDY_LOA
M
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) X Redox Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-19-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>75.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Lyonia mariana</i>	63	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Kalmia angustifolia</i>	63	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Ilex verticillata</i>	10.5		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Morphological Adaptations
5. <i>Acer rubrum</i>	0		FAC	
6. _____				
7. _____				
8. _____				
	<u>139</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Scirpus cyperinus</i>	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>34</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W25

G-17-WET

Project Site: A1B2 City/County: Winchendon / Worcester State: MA Sampling Point: G-17-WET
Applicant/Owner: National Grid
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.63040 Long: -72.05377 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C6)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained previous day
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_2/2 100 N/A N/A N/A N/A MUCKY_LOAM 4 inches of organic matter.
2-14 10YR_2/1 90 10YR_5/1 5 D M GRAVELLY_SILT_LOAM
10YR_4/3 5 C M
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
X Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 14
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-17-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>6</u> (A)
2. _____				# Dominants across all strata: <u>6</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<u>X</u> Dominance Test is > 50%
1. <i>Spiraea alba</i>	63	X	FACW	Prevalence Index is <= 3.0
2. <i>Ilex verticillata</i>	38	X	FACW	Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Lyonia ligustrina</i>	38	X	FACW	Rapid Test for Hydrophytic Vegetation
4. <i>Kalmia latifolia</i>	5		FACU	Morphological Adaptations
5. _____				
6. _____				
7. _____				
8. _____				
	<u>144</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	15	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	15	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Cornus canadensis</i>	5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>73</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W26

G-18-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/28/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-18-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%
Subregion (LRR or MLRA): LRR R Lat: 42.63021 Long: -72.05357 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 8 to 15 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_5/3 100 N/A N/A N/A SILT_LOAM
4-8 10YR_5/6 100 N/A N/A N/A SILT_LOAM Highly compacted
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? No
Depth (inches): 8
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-18-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Ilex verticillata</i>	38	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. <i>Kalmia angustifolia</i>	38	X	FAC	
3. <i>Quercus rubra</i>	3		FACU	
4. <i>Acer rubrum</i>	3		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
	82	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Pteridium aquilinum</i>	38	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Gaultheria procumbens</i>	38	X	FACU	
3. <i>Gaylussacia baccata</i>	20.5		FACU	
4. <i>Maianthemum canadense</i>	10.5		FACU	
5. <i>Rubus hispidus</i>	3		FACW	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	110	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
Hydrophytic Vegetation Present? <u>Yes</u>				

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W26

G-18-WET

Project Site: A1B2 City/County: Winchendon / Worcester State: MA Sampling Point: G-18-WET
Applicant/Owner: National Grid
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.63024 Long: -72.05350 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 3 to 8 percent slopes NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
X Surface Water (A1) Water-Stained Leaves (B9)
X High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? X Depth (inches): 1
Water Table Present? X Depth (inches): Surface
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Rained previous day, standing water was observed to be present prior to rain
Remarks: At least one primary or two secondary indicators of wetland hydrology; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_2/1 100 N/A N/A N/A MUCKY_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 2
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-18-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>5</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Ilex verticillata</i>	63	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Spiraea alba</i>	38	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Kalmia angustifolia</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Viburnum nudum</i>	3		FACW	<input type="checkbox"/> Morphological Adaptations
5. _____				
6. _____				
7. _____				
8. _____				
	<u>107</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata:
1. <i>Calamagrostis canadensis</i>	85.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Onoclea sensibilis</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Impatiens capensis</i>	38	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Athyrium asplenioides</i>	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Scirpus cyperinus</i>	3		OBL	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>175</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W27

G-15-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/27/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-15-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.62986 Long: -72.05278 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 8 to 15 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Raining at time of survey.
Remarks:
No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_2/1 100 N/A N/A N/A SILT_LOAM
4-18 10YR_4/6 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-15-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Kalmia angustifolia</i>	85.5	X	FAC	
2. <i>Acer rubrum</i>	3		FAC	
3. <i>Tsuga canadensis</i>	0		FACU	
4. <i>Quercus rubra</i>	0		FACU	
5. _____				
6. _____				
7. _____				
8. _____				
	88	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Gaultheria procumbens</i>	38	X	FACU	
2. <i>Rubus hispidus</i>	20.5	X	FACW	
3. <i>Cornus canadensis</i>	20.5	X	FAC	
4. <i>Trientalis borealis</i>	3		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	82	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 3 (A)

Dominants across all strata: 4 (B)

% Dominants OBL, FACW, FAC: 75.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply By:	
OBL _____ x 1 = _____		
FACW _____ x 2 = _____		
FAC _____ x 3 = _____		
FACU _____ x 4 = _____		
UPL _____ x 5 = _____		
Sum: _____ (A)		_____ (B)
Prevalence Index = B/A = _____		

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W27

G-15-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/27/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-15-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.62984 Long: -72.05264 Datum: WGS 1984
Soil Map Unit: Colton gravelly loamy sand, 8 to 15 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C6)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
X Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Raining at time of survey.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_2/1 97 10YR_3/6 3 C M MUCKY_LOAM 3 inches of organic matter above soils.
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
X Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bed Rock
Depth (inches): 3
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-15-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: 4 (A)
2. _____	_____	_____	_____	# Dominants across all strata: 4 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: Multiply By:
2. _____	_____	_____	_____	OBL _____ x 1 = _____
3. _____	_____	_____	_____	FACW _____ x 2 = _____
4. _____	_____	_____	_____	FAC _____ x 3 = _____
5. _____	_____	_____	_____	FACU _____ x 4 = _____
6. _____	_____	_____	_____	UPL _____ x 5 = _____
7. _____	_____	_____	_____	Sum: _____ (A) _____ (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Viburnum nudum	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Spiraea alba	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Kalmia angustifolia	10.5		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	79	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus hispidus	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Onoclea sensibilis	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Athyrium asplenoides	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Osmundastrum cinnamomeum	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Quercus rubra	0		FACU	Woody vine - All woody vines, regardless of height.
6. Trientalis borealis	0		FAC	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	97	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W28

G-14-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/27/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-14-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
Subregion (LRR or MLRA): LRR R Lat: 42.62297 Long: -72.03899 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_2/2 100 N/A N/A N/A SILT_LOAM 2 inches of organic detritus above
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 3
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-14-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u> </u> Multiply By: <u> </u>
2. _____				OBL <u> </u> x 1 = <u> </u>
3. _____				FACW <u> </u> x 2 = <u> </u>
4. _____				FAC <u> </u> x 3 = <u> </u>
5. _____				FACU <u> </u> x 4 = <u> </u>
6. _____				UPL <u> </u> x 5 = <u> </u>
7. _____				Sum: <u> </u> (A) <u> </u> (B)
8. _____				Prevalence Index = B/A = <u> </u>
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	3	X	FACW	<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>3</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Gaultheria procumbens</i>	63	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Gaylussacia baccata</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Rubus hispidus</i>	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Dendrolycopodium obscurum</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>150</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u> </u> No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W28

G-14-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/27/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-14-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.62317 Long: -72.03930 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
X Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
X Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_2/2 100 N/A N/A N/A MUCKY_LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
X Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 3
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-14-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Ilex verticillata	63	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. Spiraea alba	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				Definitions of Vegetation Strata:
	66	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: 5 ft)				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
1. Onoclea sensibilis	38	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
2. Eutrochium maculatum	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. Carex crinita	10.5		OBL	
4. Persicaria pensylvanica	3		FACW	Woody vine - All woody vines, regardless of height.
5. Eupatorium perfoliatum	0		FACW	
6. Euthamia graminifolia	0		FAC	
7. Lysimachia_SP	0		NULL	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	62	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W29

G-13-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/27/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-13-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.62016 Long: -72.03362 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-7 10YR_4/3 100 N/A N/A N/A SILT_LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 7
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-13-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Frangula alnus</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Viburnum dentatum</i>	0		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	0		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	10	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	63	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Lycopodium clavatum</i>	38	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dendrolycopodium obscurum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	167	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W29

G-13-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/27/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-13-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.62031 Long: -72.03387 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C6)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-6 10YR_2/2 95 10YR_3/6 5 C M MUCKY_LOAM Some gravel mixed in bottom 1 inch
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
X Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-13-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Frangula alnus</i>	10.5		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Alnus serrulata</i>	3		OBL	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	76	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Calamagrostis canadensis</i>	63	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Eutrochium maculatum</i>	38	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago rugosa</i>	20.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Dennstaedtia punctilobula</i>	3		UPL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Persicaria pensylvanica</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Impatiens capensis</i>	3		FACW	
7. <i>Lycopus americanus</i>	0		OBL	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	130	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W30

G-12-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/27/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-12-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%
Subregion (LRR or MLRA): LRR R Lat: 42.62003 Long: -72.03312 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PFO
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_4/4 100 N/A N/A N/A SILT_LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 6
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-12-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: 3 (A)
2. _____	_____	_____	_____	# Dominants across all strata: 6 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: Multiply By:
2. _____	_____	_____	_____	OBL _____ x 1 = _____
3. _____	_____	_____	_____	FACW _____ x 2 = _____
4. _____	_____	_____	_____	FAC _____ x 3 = _____
5. _____	_____	_____	_____	FACU _____ x 4 = _____
6. _____	_____	_____	_____	UPL _____ x 5 = _____
7. _____	_____	_____	_____	Sum: _____ (A) _____ (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Frangula alnus</i>	38	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Juniperus communis</i>	38	X	FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Ilex verticillata</i>	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Spiraea alba</i>	10.5		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Viburnum dentatum</i>	3		FAC	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	100	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Solidago rugosa</i>	20.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Maianthemum canadense</i>	10.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Danthonia sericea</i>	10.5	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Fragaria virginiana</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. <i>Trientalis borealis</i>	3		FAC	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	58	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____	_____	_____	_____	<input type="checkbox"/>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-12-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/27/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-12-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.61989 Long: -72.03302 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PFO
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 4
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Did not apply geomorph in position due to a stone wall running through the wetland, potentially altering wetland hydrology and extent.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/2 80 10YR_3/6 20 C M SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
X Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-12-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Ilex verticillata</i>	63	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Frangula alnus</i>	20.5	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>86</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Onoclea sensibilis</i>	63	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Ribes triste</i>	20.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Rubus hispidus</i>	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Eutrochium purpureum</i>	3		FAC	Woody vine - All woody vines, regardless of height.
5. <i>Rubus idaeus</i>	3		FACU	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>100</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W31

G-10-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/26/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-10-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.61907 Long: -72.03162 Datum: WGS 1984
Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Recently harvested farm field. Tilled soils.
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_3/3 98 10YR_3/6 2 C M SILT_LOAM Auger refusal at 6 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 6
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met. Recently tilled soils.

VEGETATION - Use scientific names of plants.



Sampling Point: G-10-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				_____ Dominance Test is > 50%
2. _____				_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	3	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Avena sativa</i>	3	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	6	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Data point located in a recently harvested farm field. No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W31

G-10-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/26/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-10-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.61904 Long: -72.03163 Datum: WGS 1984
Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B15)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C6)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
One edge of wetland boundary formed by stone wall; geomorphic position not applied.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/2 95 10YR_3/3 5 C M MUCKY_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
X Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:
Indicator F6 (Redox Dark Surface) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-10-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Alnus serrulata</i>	63	X	OBL	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	3		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	66	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Carex crinita</i>	63	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Onoclea sensibilis</i>	20.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Impatiens capensis</i>	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago rugosa</i>	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Symphytichum novae-angliae</i>	10.5		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Chelone glabra</i>	3		OBL	
7. <i>Thalictrum_SP</i>	3		NULL	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	121	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-9-UP

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/26/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-9-UP
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.61809 Long: -72.02981 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Only one secondary indicator of wetland hydrology is present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0 100 N/A N/A N/A N/A 2 inch of organics then refusal. Adjacent area is manicured lawn.
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bed rock Hydric Soil Present? No
Depth (inches): 0
Remarks: Two inches of organics then auger refusal. The adjacent area is manicured lawn.

VEGETATION - Use scientific names of plants.



Sampling Point: G-9-UP

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Spiraea alba	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Acer rubrum	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Vaccinium stamineum	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	27	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus hispidus	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Dennstaedtia punctilobula	10.5		UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Rubus idaeus	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Solidago altissima	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	54	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks:
1. _____				(If observed, list morphological adaptations below).
2. _____				Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.
3. _____				
4. _____				
5. _____				
	0	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-9-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/26/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-9-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.61805 Long: -72.02966 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
X Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
X Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Hummocks and sphagnum observed throughout wetland. Wetland appears to be surface water run-off driven.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0 100 N/A N/A N/A N/A 2 inches of organic layer and then refusal. F3 observed in lower areas of wetland, assume hydric.
1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 0
Hydric Soil Present? Yes
Remarks: Two inches of organic layer and then auger refusal due to bedrock. F3 observed in lower areas of wetland; assume hydric.

VEGETATION - Use scientific names of plants.



Sampling Point: G-9-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Frangula alnus</i>	10.5		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Spiraea alba</i>	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Prunus virginiana</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	87	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	85.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Scirpus cyperinus</i>	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Acer rubrum</i>	0		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	99	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks:
1. _____				(If observed, list morphological adaptations below). Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-8-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/26/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-8-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Ridge Local relief (concave, convex, none): Flat Slope (%): 1-2%
Subregion (LRR or MLRA): LRR R Lat: 42.61776 Long: -72.02893 Datum: WGS 1984
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_5/4 100 N/A N/A N/A SILT_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? No
Depth (inches): 6
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-8-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____	_____	_____	_____	# Dominants across all strata: <u>4</u> (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: <u> </u> Multiply By: <u> </u>
2. _____	_____	_____	_____	OBL <u> </u> x 1 = <u> </u>
3. _____	_____	_____	_____	FACW <u> </u> x 2 = <u> </u>
4. _____	_____	_____	_____	FAC <u> </u> x 3 = <u> </u>
5. _____	_____	_____	_____	FACU <u> </u> x 4 = <u> </u>
6. _____	_____	_____	_____	UPL <u> </u> x 5 = <u> </u>
7. _____	_____	_____	_____	Sum: <u> </u> (A) <u> </u> (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = <u> </u>
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Frangula alnus</i>	3	X	FAC	<u> </u> Dominance Test is > 50%
2. <i>Betula cordifolia</i>	3	X	FACU	<u> </u> Prevalence Index is <= 3.0
3. <i>Juniperus communis</i>	3	X	FACU	<u> </u> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Quercus rubra</i>	0		FACU	<u> </u> Rapid Test for Hydrophytic Vegetation
5. <i>Acer rubrum</i>	0		FAC	<u> </u> Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>9</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Danthonia sericea</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Gaylussacia baccata</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Fagus grandifolia</i>	0		FACU	Woody vine - All woody vines, regardless of height.
6. <i>Apocynum cannabinum</i>	0		FAC	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>69</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u> </u> No
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-8-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/26/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-8-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.61758 Long: -72.02866 Datum: WGS 1984
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-18 10YR_2/1 90 10YR_3/3 10 C M MUCKY_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 18
Hydric Soil Present? Yes
Remarks:
Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-8-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 8 (A)
2. _____				# Dominants across all strata: 8 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <i>Ilex verticillata</i>	85.5	X	FACW	Total % Cover of: Multiply By:
2. <i>Spiraea alba</i>	3		FACW	OBL _____ x 1 = _____
3. <i>Frangula alnus</i>	3		FAC	FACW _____ x 2 = _____
4. <i>Prunus virginiana</i>	0		FACU	FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	91	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Carex folliculata</i>	10.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Thelypteris palustris</i>	3	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Scirpus pedicellatus</i>	3	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Scirpus cyperinus</i>	3	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Rubus hispidus</i>	3	X	FACW	Woody vine - All woody vines, regardless of height.
6. <i>Carex intumescens</i>	3	X	FACW	
7. <i>Osmundastrum cinnamomeum</i>	3	X	FACW	
8. <i>Hypericum virginicum</i>	0		OBL	
9. _____				
10. _____				
11. _____				
12. _____				
	28	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W34

G-7-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/25/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-7-UPL
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 12-15%
Subregion (LRR or MLRA): LRR R Lat: 42.61474 Long: -72.02368 Datum: WGS 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_4/2 100 N/A N/A N/A LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 2
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: G-7-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>0</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>0.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
Shrub Stratum (Plot size: 15 ft)				
1. Juniperus communis	20.5	X	FACU	
2. Pinus strobus	10.5	X	FACU	
3. Fagus grandifolia	10.5	X	FACU	
4. Quercus rubra	3		FACU	
5. Picea rubens	0		FACU	
6. _____				
7. _____				
8. _____				
<u>44</u> = Total Cover				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
Herb Stratum (Plot size: 5 ft)				
1. Gaultheria procumbens	85.5	X	FACU	
2. Rubus hispidus	10.5		FACW	
3. Lycopodium clavatum	3		FAC	
4. Dendrolycopodium obscurum	3		FACU	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>102</u> = Total Cover				
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				Hydrophytic Vegetation Present? <u>No</u>

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WIN-W34

G-7-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/25/2020
Applicant/Owner: National Grid State: MA Sampling Point: G-7-WET
Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%WGS
Subregion (LRR or MLRA): LRR Lat: 42.61470 Long: -72.02379 Datum: 1984
Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine emergent wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Sphagnum present throughout study area.
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/1 100 N/A N/A N/A MUCKY_PEAT
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: G-7-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	21	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Thelypteris palustris</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Eriophorum tenellum</i>	38	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus hispidus</i>	20.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago canadensis</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Lysimachia_SP</i>	3		NULL	Woody vine - All woody vines, regardless of height.
6. <i>Cornus canadensis</i>	3		FAC	
7. <i>Acer rubrum</i>	0		FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	113	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.

Gardner, Massachusetts Forms

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WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-7-UPL

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-7-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 12-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.61474 Long: -72.02368 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_4/2	100		N/A	N/A	N/A	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>No</u>	
Depth (inches): <u>2</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-7-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. Juniperus communis	20.5	X	FACU	
2. Pinus strobus	10.5	X	FACU	
3. Fagus grandifolia	10.5	X	FACU	
4. Quercus rubra	3		FACU	
5. Picea rubens	0		FACU	
6. _____				
7. _____				
8. _____				
	44	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. Gaultheria procumbens	85.5	X	FACU	
2. Rubus hispidus	10.5		FACW	
3. Lycopodium clavatum	3		FAC	
4. Dendrolycopodium obscurum	3		FACU	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	102	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 0 (A)

Dominants across all strata: 4 (B)

% Dominants OBL, FACW, FAC: 0.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of: Multiply By:

OBL x 1 =

FACW x 2 =

FAC x 3 =

FACU x 4 =

UPL x 5 =

Sum: (A) (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

 Dominance Test is > 50%

 Prevalence Index is <= 3.0

 Problematic Hydrophytic Vegetation¹ (explain)

 Rapid Test for Hydrophytic Vegetation

 Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? No

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-7-WET

Project Site: A1B2 City/County: Winchendon / Worcester Samp. Date: 8/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-7-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%WGS
 Subregion (LRR or MLRA): LRR Lat: 42.61470 Long: -72.02379 Datum: 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine emergent wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Sphagnum present throughout study area.	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/1	100		N/A	N/A	N/A	MUCKY_PEAT	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input checked="" type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>6</u>	Hydric Soil Present? <u>Yes</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: G-7-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Spiraea alba</i>	10.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Ilex verticillata</i>	10.5	X	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>21</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Thelypteris palustris</i>	38	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Eriophorum tenellum</i>	38	X	OBL	
3. <i>Rubus hispidus</i>	20.5		FACW	
4. <i>Solidago canadensis</i>	10.5		FACU	
5. <i>Lysimachia_SP</i>	3		NULL	
6. <i>Cornus canadensis</i>	3		FAC	
7. <i>Acer rubrum</i>	0		FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>113</u> = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-6-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-6-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR R Lat: 42.61170 Long: -72.01879 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	

Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/2	100		N/A	N/A	N/A	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>3</u>		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-6-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 3 (A) # Dominants across all strata: 5 (B) % Dominants OBL, FACW, FAC: 60.00% (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum	(Plot size: 30 ft)				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		
Shrub Stratum	(Plot size: 15 ft)				
1.	<i>Kalmia angustifolia</i>	20.5	X	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.	<i>Spiraea alba</i>	10.5	X	FACW	
3.					
4.					
5.					
6.					
7.					
8.					
		31	= Total Cover		
Herb Stratum	(Plot size: 5 ft)				
1.	<i>Gaultheria procumbens</i>	63	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2.	<i>Rubus hispidus</i>	63	X	FACW	
3.	<i>Pteridium aquilinum</i>	38	X	FACU	
4.	<i>Cornus canadensis</i>	3		FAC	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		167	= Total Cover		
Woody Vines	(Plot size: 30 ft)				
1.					Hydrophytic Vegetation Present? Yes
2.					
3.					
4.					
5.					
		0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-6-WET

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-6-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.61152 Long: -72.01871 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Sphagnum present throughout			
Remarks: At least one primary indicator or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR_2/1	100		N/A	N/A	N/A	MUCKY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>		<u>Yes</u>	
Depth (inches): <u>12</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-6-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = _____
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Kalmia angustifolia</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Viburnum dentatum</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>40</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Scirpus pedicellatus</i>	63	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Rubus hispidus</i>	38	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Calamagrostis canadensis</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Gaultheria procumbens</i>	3		FACU	Woody vine - All woody vines, regardless of height.
5. <i>Lysimachia_SP</i>	0		NULL	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>107</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-5-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-5-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR R Lat: 42.60845 Long: -72.01630 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? no If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Remarks: Powerline ROW
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/2	100		N/A	N/A	N/A	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>3</u>	Hydric Soil Present? <u>no</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-5-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. Pinus strobus	3	X	FACU	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Juniperus communis	3	X	FACU	
3. Kalmia angustifolia	0		FAC	
4. Acer rubrum	0		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
	<u>6</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. Pteridium aquilinum	63	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. Rubus hispidus	63	X	FACW	
3. Dendrolycopodium obscurum	3		FACU	
4. Lycopodium clavatum	3		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>132</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		
Hydrophytic Vegetation Present? <u>No</u>				

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-5-WET

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-5-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.60842 Long: -72.01629 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology no naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? <u>X</u> Depth (inches): <u>12</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Sphagnum present throughout	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-18	10YR_2/1	100		N/A	N/A	MUCKY_PEAT	Gravel layer at 18 inch, soil unconsolidated

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input checked="" type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>18</u>	Hydric Soil Present? <u>Yes</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: G-5-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <i>Larix laricina</i>	3	X	FACW	Total % Cover of: OBL _____ x 1 = _____
2. <i>Ilex verticillata</i>	3	X	FACW	FACW _____ x 2 = _____
3. <i>Spiraea alba</i>	3	X	FACW	FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
	9	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Eriophorum tenellum</i>	38	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Dennstaedtia punctilobula</i>	20.5		UPL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago altissima</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Thelypteris palustris</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Acer rubrum</i>	0		FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	110	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-4-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-4-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.60650 Long: -72.01165 Datum: WGS 1984
 Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: PFO
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_2/2	100		N/A	N/A	N/A	LOAM	
4-12	10YR_5/4	95	10YR_5/8	5	C	M	LOAM	
12-18	10YR_6/1	50	10YR_5/4	40	N/A	N/A	LOAM	Mixed matrix
			10YR_5/8	10	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: G-4-UPL

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		
		0	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-4-WET

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-4-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.60644 Long: -72.01142 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PFO
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? <u>X</u> Depth (inches): <u>2</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Sphagnum present throughout wetland	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR_4/2	95	10YR_4/6	5	C	M	SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>12</u>		Hydric Soil Present? <u>Yes</u>
Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.		

VEGETATION - Use scientific names of plants.



Sampling Point: G-4-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Ilex verticillata</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Spiraea alba</i>	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Kalmia angustifolia</i>	10.5		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Viburnum nudum</i>	3		FACW	<input type="checkbox"/> Morphological Adaptations
5. <i>Lyonia ligustrina</i>	3		FACW	
6. <i>Acer rubrum</i>	3		FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <i>Populus deltoides</i>	0		FAC	
8. _____				Definitions of Vegetation Strata:
	<u>68</u>	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: <u>5 ft</u>)				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
1. <i>Rubus hispidus</i>	63	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
2. <i>Carex folliculata</i>	20.5	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. <i>Scirpus cyperinus</i>	10.5		OBL	Woody vine - All woody vines, regardless of height.
4. <i>Athyrium asplenioides</i>	3		FAC	
5. <i>Glyceria canadensis</i>	3		OBL	
6. <i>Gaultheria procumbens</i>	0		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>100</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-3-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-3-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.60540 Long: -72.00707 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? <u> </u> Depth (inches): <u>N/A</u> Water Table Present? <u> </u> Depth (inches): <u>N/A</u> Saturation Present? <u> </u> Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	LOAM	
3-6	10YR_2/2	95	5YR_3/4	5	C	M	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>6</u>	Hydric Soil Present? <u>No</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: G-3-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Kalmia angustifolia</i>	38	X	FAC	
2. <i>Acer rubrum</i>	3		FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	41	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Rubus flagellaris</i>	63	X	FACU	
2. <i>Cornus canadensis</i>	10.5		FAC	
3. <i>Gaultheria procumbens</i>	3		FACU	
4. <i>Carex gracillima</i>	3		FACU	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	79	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 2 (B)

% Dominants OBL, FACW, FAC: 50.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of: Multiply By:

OBL x 1 =

FACW x 2 =

FAC x 3 =

FACU x 4 =

UPL x 5 =

Sum: (A) (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

WF-G-3

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: WF-G-3
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.60534 Long: -72.00681 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Sphagnum present throughout			
Remarks: At least one primary or two secondary indicators of wetland hydrology are present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-24	10YR_2/1	97	10YR_4/6	3	C	M	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:		<u>Yes</u>	
Depth (inches):			
Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: WF-G-3

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>75.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Ilex verticillata</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Juniperus communis</i>	38	X	FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Spiraea alba</i>	10.5		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>86</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus hispidus</i>	38	X	FACW	
2. <i>Matteuccia struthiopteris</i>	20.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>58</u>	= Total Cover		Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
Woody Vines (Plot size: <u>30 ft</u>)				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
1. _____				
2. _____				Woody vine - All woody vines, regardless of height.
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-2-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-2-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.60490 Long: -72.00574 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/2	100		N/A	N/A	N/A	LOAM	Refusal at 6

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>No</u>	
Depth (inches): <u>6</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-2-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Juniperus communis</i>	10.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Spiraea alba</i>	3		FACW	_____ Prevalence Index is <= 3.0
3. <i>Ilex verticillata</i>	3		FACW	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Kalmia angustifolia</i>	3		FAC	_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				
7. _____				
8. _____				
	19	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	38	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pteridium aquilinum</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus flagellaris</i>	20.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Gaultheria procumbens</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Cornus canadensis</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. <i>Maianthemum canadense</i>	3		FACU	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	113	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-2-WET

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-2-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.60492 Long: -72.00576 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology are present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/1	100		N/A	N/A	N/A	MUCKY_LOAM	Refusal at 8, gravel

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>		<u>Yes</u>	
Depth (inches): <u>8</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-2-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 8 (A)
2. _____				# Dominants across all strata: 9 (B)
3. _____				% Dominants OBL, FACW, FAC: 88.89% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Spiraea alba	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	58	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus hispidus	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Thelypteris palustris	3	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Onoclea sensibilis	3	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Carex intumescens	3	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Scirpus cyperinus	3	X	OBL	Woody vine - All woody vines, regardless of height.
6. Gentiana linearis	3	X	FACW	
7. Maianthemum canadense	3	X	FACU	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	28	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-1-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-1-UPL
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR R Lat: 42.60413 Long: -72.00178 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_3/3	95	10YR_4/4	5	N/A	M	LOAM	Mixed matrix

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Boulder</u> Depth (inches): <u>6</u>		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-1-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Corylus americana</i>	3	X	FACU	_____ Dominance Test is > 50%
2. <i>Acer rubrum</i>	0		FAC	_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	3	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	10.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Maianthemum canadense</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Gaultheria procumbens</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	79	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

G-1-WET

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 8/24/2020
 Applicant/Owner: National Grid State: MA Sampling Point: G-1-WET
 Investigator(s): C. Cyrus, D. Robertson Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.60399 Long: -72.00175 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? no Remarks: Drought conditions
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: Drought conditions
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>8</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR_2/2	100		N/A	N/A	N/A	MUCK	Refusal at 12, gravel

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>		<u>Yes</u>	
Depth (inches): <u>12</u>			
Remarks:			
Other			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: G-1-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Ilex verticillata</i>	10.5	X	FACW	
2. <i>Spiraea alba</i>	10.5	X	FACW	
3. <i>Acer rubrum</i>	0		FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>21</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Calamagrostis canadensis</i>	63	X	OBL	
2. <i>Carex lurida</i>	20.5		OBL	
3. <i>Rubus hispidus</i>	10.5		FACW	
4. <i>Onoclea sensibilis</i>	10.5		FACW	
5. <i>Thelypteris palustris</i>	3		FACW	
6. <i>Eriophorum tenellum</i>	0		OBL	
7. <i>Euthamia graminifolia</i>	0		FAC	
8. <i>Lysimachia_SP</i>	0		NULL	
9. _____				
10. _____				
11. _____				
12. _____				
	<u>107</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C20 (upland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Samp. Date: 6/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C20 (upland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Flat Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.60238 Long: -71.99451 Datum: NAD 83
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	

Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	7.5YR_3/4	100		N/A	N/A	N/A	SAND	
3-5	7.5YR_5/6	100		N/A	N/A	N/A	SAND	
5-10	7.5YR_3/4	100		N/A	N/A	N/A	LOAMY_VERY_FINE_SA ND	
10-14	7.5YR_4/3	95	2.5YR_4/4	5	C	M	SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>14</u>		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C20 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>80.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>4</u> x 2 = <u>8</u>
3. _____				FAC <u>1</u> x 3 = <u>3</u>
4. _____				FACU <u>2</u> x 4 = <u>8</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>7</u> (A) <u>19</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.38</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Vaccinium corymbosum</i>	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>44</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Onoclea sensibilis</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Pteridium aquilinum</i>	10.5	X	FACU	
3. <i>Solidago rigida</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				
5. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
6. _____				
7. _____				Woody vine - All woody vines, regardless of height.
8. _____				
9. _____				Hydrophytic Vegetation Present? <u>Yes</u>
10. _____				
11. _____				
12. _____				
	<u>34</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland GA-W7

Wetland C20 (wetland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Samp. Date: 6/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C20 (wetland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Hummocky Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.60240 Long: -71.99464 Datum: NAD 83
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: PUB With PEM, PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: Other _____			

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Saturation Present?	<u> </u>	Depth (inches):	<u>N/A</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: _____

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3		100		N/A	N/A	N/A		Organics
3-5	10YR_3/1	100		N/A	N/A	N/A	SAND	
5-14	10YR_5/2	95	5YR_4/4	5	C	M	SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input checked="" type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>Yes</u>
Type: _____			
Depth (inches): _____			
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C20 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 6 x 2 = 12
3. _____				FAC 1 x 3 = 3
4. _____				FACU 0 x 4 = 0
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 7 (A) 15 (B)
7. _____				Prevalence Index = B/A = 2.85
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Spiraea tomentosa</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Ilex verticillata</i>	3		FACW	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	40	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Phalaris arundinacea</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Onoclea sensibilis</i>	3		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	41	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C21 (upland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Smp. Date: 6/12/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C21 (upland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.59989 Long: -71.99746 Datum: NAD 83
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-2	10YR_3/2	100		N/A	N/A	FINE_SANDY_LOAM	
2-4	10YR_4/3	100		N/A	N/A	FINE_SANDY_LOAM	
4-18	5YR_4/4	100		N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>No</u>	
Depth (inches): _____			
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C21 (upland)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <u>Betula populifolia</u>	3	X	FAC	# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>7</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>57.14%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	3	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. <u>Betula populifolia</u>	3	X	FAC	OBL <u>0</u> x 1 = <u>0</u>
2. <u>Acer rubrum</u>	3	X	FAC	FACW <u>3</u> x 2 = <u>6</u>
3. _____				FAC <u>3</u> x 3 = <u>9</u>
4. _____				FACU <u>4</u> x 4 = <u>16</u>
5. _____				UPL <u>1</u> x 5 = <u>5</u>
6. _____				Sum: <u>11</u> (A) <u>36</u> (B)
7. _____				
8. _____				
	6	= Total Cover		Prevalence Index = B/A = <u>2.95</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <u>Spiraea tomentosa</u>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <u>Vaccinium angustifolium</u>	10.5	X	FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <u>Rubus phoenicolasius</u>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Dennstaedtia punctilobula</u>	20.5	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <u>Maianthemum canadense</u>	10.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <u>Rubus hispidus</u>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <u>Osmundastrum cinnamomeum</u>	3		FACW	Woody vine - All woody vines, regardless of height.
5. <u>Pteridium aquilinum</u>	3		FACU	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	40	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C21 (wetland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Samp. Date: 6/12/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C21 (wetland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.59995 Long: -71.99739 Datum: NAD 83
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: Other _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>1</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR_2/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>No</u>	
Depth (inches): <u>10</u>			
Remarks: _____			
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met. Area is disturbed/problematic.			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C21 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 2 x 2 = 4
4. _____				FAC 2 x 3 = 6
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 4 (A) 10 (B)
8. _____				Prevalence Index = B/A = 2.26
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Spiraea alba	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Viburnum dentatum	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	31	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Onoclea sensibilis	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Arisaema triphyllum	10.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	48	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-22-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-22-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 12-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.59836 Long: -71.99870 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_4/3	100		N/A	N/A	N/A	LOAM	Auger refusal at 3in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>3</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: C-22-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Spiraea alba</i>	38	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Acer saccharum</i>	20.5	X	FACU	
3. <i>Kalmia latifolia</i>	3		FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>61</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Parathelypteris noveboracensis</i>	38	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Andropogon virginicus</i>	3		FACU	
3. <i>Solidago altissima</i>	3		FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>44</u> = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-22-WET

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-22-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.59832 Long: -71.99877 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Localized inundation to 2 inches			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	10YR_3/1	100		N/A	N/A	N/A	MUCKY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>14</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C-22-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <i>Populus tremuloides</i>	10.5	X	FACU	Total % Cover of: Multiply By:
2. <i>Pinus strobus</i>	3		FACU	OBL _____ x 1 = _____
3. <i>Quercus rubra</i>	3		FACU	FACW _____ x 2 = _____
4. <i>Betula lenta</i>	3		FACU	FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
19 = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
0 = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Onoclea sensibilis</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
41 = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C23 (upland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Samp. Date: 6/12/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C23 (upland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Hummocky Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.59775 Long: -71.99865 Datum: NAD 83
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	

Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>No</u>
Remarks: <u>Numerous large rocks and boulders within the wetland. Too much refusal throughout to test soils but assumed to not be hydric due to site conditions. Disturbed/problematic area.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C23 (upland)

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. <i>Quercus rubra</i>	20.5	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)	
2. <i>Acer rubrum</i>	20.5	X	FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	41	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0</u> x 1 = <u>0</u> FACW <u>1</u> x 2 = <u>2</u> FAC <u>1</u> x 3 = <u>3</u> FACU <u>2</u> x 4 = <u>8</u> UPL <u>2</u> x 5 = <u>10</u> Sum: <u>6</u> (A) <u>23</u> (B) Prevalence Index = B/A = <u>3.89</u>	
Sapling Stratum (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. <i>Vaccinium corymbosum</i>	20.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	20	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. <i>Dennstaedtia punctilobula</i>	38	X	UPL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Solidago altissima</i>	10.5		FACU		
3. <i>Rubus apogaeus</i>	10.5		UPL		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	59	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1. _____				Hydrophytic Vegetation Present? <u>No</u>	
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C23 (wetland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester State: MA Samp. Date: 6/12/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: Wetland C23 (wetland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Undulating Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.59783 Long: -71.99877 Datum: NAD 83
 Soil Map Unit: Peru-Marlo's association, 3 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u>X</u>	Depth (inches):	<u>Surface</u>
Water Table Present?	<u>X</u>	Depth (inches):	<u>Surface</u>
Saturation Present?	<u>X</u>	Depth (inches):	<u>Surface</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input checked="" type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:		<u>Yes</u>	
Depth (inches):			
Remarks: Numerous large rocks and boulders within the wetland. Too much refusal throughout to test soils but assumed to be hydric due to site conditions (hydrology and hydrophytic vegetation prevalence). Disturbed/problematic area.			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C23 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>80.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>4</u> x 2 = <u>8</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>1</u> x 4 = <u>4</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>5</u> (A) <u>12</u> (B)
7. _____				Prevalence Index = B/A = <u>2.87</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Vaccinium angustifolium</i>	20.5	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>31</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus hispidus</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>31</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Other

Couldn't get a good analysis due to boulder field and rocky refusal. Low chroma and saturated.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-24-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-24-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR R Lat: 42.59279 Long: -71.99921 Datum: WGS 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_3/1	100		N/A	N/A	N/A	LOAM	
1-3	10YR_4/3	100		N/A	N/A	N/A	LOAM	Auger refusal at 3in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>3</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: C-24-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <i>Kalmia angustifolia</i>	20.5	X	FAC	
2. <i>Lyonia ligustrina</i>	10.5	X	FACW	
3. <i>Rubus pensilvanicus</i>	3		FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>34</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Parathelypteris noveboracensis</i>	20.5	X	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>20</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) is present with >50% of dominant species across all strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-25-WET

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-25-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 5-8%WGS
 Subregion (LRR or MLRA): LRR R Lat: 42.58648 Long: -71.99713 Datum: 1984
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	Yes		
Wetland Hydrology Present?	Yes		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): N/A	Yes	
Water Table Present?	Depth (inches): N/A		
Saturation Present?	Depth (inches): Surface		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
0-3	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	MUCK	Gravelly. Auger refusal at 3in
	10YR_3/1	100		N/A	N/A	N/A		
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.					² Location: PL=Pore Lining, M=Matrix.			
Hydric Soil Indicators:					Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)				<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)				<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)				<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)				<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)				<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)				<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)				<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)				<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)					<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)					<input checked="" type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)					<input type="checkbox"/> Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed):					Hydric Soil Present?			
Type: Gravel					Yes			
Depth (inches): 3								
Remarks:								

VEGETATION - Use scientific names of plants.



Sampling Point: C-25-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	41	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Symphytichum puniceum</i>	20.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago canadensis</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Thelypteris palustris</i>	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	79	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C26 (upland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Smp. Date: 6/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C26 (upland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Convex Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.59054 Long: -71.99839 Datum: NAD 83
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percents slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_3/4	100		N/A	N/A	N/A	LOAMY_FINE_SAND	
4-8	7.5YR_4/4	95	7.5YR_5/6	5	C	M	SAND	
8-10	2.5Y_6/4	100		N/A	N/A	N/A	SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>10</u>	Hydric Soil Present? <u>No</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C26 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>3</u> x 2 = <u>6</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>1</u> x 4 = <u>4</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>6</u> (A) <u>16</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.43</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Rubus allegheniensis</i>	10.5	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Frangula alnus</i>	3		FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>16</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Solidago rugosa</i>	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Impatiens capensis</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Rubus hispidus</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>44</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C26 (wetland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Samp. Date: 6/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C26 (wetland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.59063 Long: -71.99849 Datum: NAD 83
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percents slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_3/2	100		N/A	N/A	N/A	LOAMY_SAND	
6 - 8	10YR_4/2	90	10YR_5/2	10	D	M	LOAMY_SAND	
8 - 12	10YR_5/2	50	10YR_6/1	20	D	M	LOAMY_SAND	
			5YR_4/4	5	C	M		
			2.5Y_3/1	25	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>>12</u>			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C26 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 9 x 2 = 18
3. _____				FAC 0 x 3 = 0
4. _____				FACU 1 x 4 = 4
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 10 (A) 22 (B)
7. _____				Prevalence Index = B/A = 2.06
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Salix alba</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Morphological Adaptations
6. <i>Rubus allegheniensis</i>	3		FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	33	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Impatiens capensis</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmundastrum cinnamomeum</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Onoclea sensibilis</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	64	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-25-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-25-UPL
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.58657 Long: -71.99723 Datum: WGS 1984
Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-12 10YR_4/4 100 N/A N/A N/A GRAVELLY_LOAM Auger refusal at 12in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 12
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-25-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Rubus pensilvanicus</i>	38	X	FACU	_____ Dominance Test is > 50%
2. <i>Elaeagnus angustifolia</i>	3		FACU	_____ Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	44	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Solidago altissima</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Schedonorus arundinaceus</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus flagellaris</i>	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Doellingeria umbellata</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	102	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-24

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-24
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR Lat: 42.59253 Long: -71.99907 Datum:
 Soil Map Unit: Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	Yes		
Wetland Hydrology Present?	Yes		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<input checked="" type="checkbox"/> Depth (inches): 1	Yes	
Water Table Present?	<input checked="" type="checkbox"/> Depth (inches): Surface		
Saturation Present?	<input checked="" type="checkbox"/> Depth (inches): Surface		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: P			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (in)	Matrix		Redox Features			Texture	Remarks
0-5	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	
	10YR_3/1	100		N/A	N/A	N/A	MUCKY MINERAL Auger refusal at 5in
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.							
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input checked="" type="checkbox"/> Very Shallow Dark Surface (TF12)			
				<input type="checkbox"/> Other (Explain in Remarks)			
Restrictive Layer (if observed): Type: Gravel Depth (inches): 5				Hydric Soil Present? Yes			
Remarks:							

VEGETATION - Use scientific names of plants.



Sampling Point: C-24

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>10.5</u> x 1 = <u>10.5</u> FACW <u>176.0</u> x 2 = <u>352.0</u> FAC <u>0.0</u> x 3 = <u>0.0</u> FACU <u>0.0</u> x 4 = <u>0.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>186.5</u> (A) <u>362.5</u> (B) Prevalence Index = B/A = <u>1.94</u>	
Sapling Stratum (Plot size: 30 ft) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____					
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft) 1. <i>Spiraea alba</i> 63 X FACW 2. <i>Ilex verticillata</i> 38 X FACW 3. <i>Lyonia ligustrina</i> 3 FACW 4. _____ 5. _____ 6. _____ 7. _____ 8. _____					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
	104	= Total Cover			
Herb Stratum (Plot size: 5 ft) 1. <i>Rubus hispidus</i> 38 X FACW 2. <i>Onoclea sensibilis</i> 20.5 X FACW 3. <i>Typha latifolia</i> 10.5 OBL 4. <i>Osmundastrum cinnamomeum</i> 10.5 FACW 5. <i>Solidago gigantea</i> 3 FACW 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
	82	= Total Cover			
Woody Vines (Plot size: 30 ft) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____					Hydrophytic Vegetation Present? <u>Yes</u>
	0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C27 (upland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Smp. Date: 6/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C27 (upland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Hummocky Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.60201 Long: -71.99292 Datum: NAD 83
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/2	100		N/A	N/A	N/A	FINE_SAND	
2-4	10YR_4/3	100		N/A	N/A	N/A	SAND	
4-16	7.5YR_4/4	100		N/A	N/A	N/A	SAND	
>16	10YR_5/4	100		N/A	N/A	N/A	SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C27 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>0</u> x 2 = <u>0</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>3</u> x 4 = <u>12</u>
5. _____				UPL <u>1</u> x 5 = <u>5</u>
6. _____				Sum: <u>6</u> (A) <u>23</u> (B)
7. _____				Prevalence Index = B/A = <u>2.75</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Acer rubrum</u>	<u>10.5</u>	<u>X</u>	<u>FAC</u>	<input type="checkbox"/> Dominance Test is > 50%
2. <u>Frangula alnus</u>	<u>3</u>		<u>FAC</u>	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <u>Kalmia latifolia</u>	<u>3</u>		<u>FACU</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>16</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <u>Pteridium aquilinum</u>	<u>20.5</u>	<u>X</u>	<u>FACU</u>	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <u>Rubus caesius</u>	<u>10.5</u>	<u>X</u>	<u>FACU</u>	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <u>Dennstaedtia punctilobula</u>	<u>3</u>		<u>UPL</u>	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>34</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C27 (wetland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Samp. Date: 6/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C27 (wetland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Undulating Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.60203 Long: -71.99313 Datum: NAD 83
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR_2/1	100		N/A	N/A	N/A	LOAMY_FINE_SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input checked="" type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>8-12</u>			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C27 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 4 x 2 = 8
3. _____				FAC 1 x 3 = 3
4. _____				FACU 0 x 4 = 0
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 5 (A) 11 (B)
7. _____				Prevalence Index = B/A = 2.68
8. _____				
0 = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Salix alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Lyonia ligustrina</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
47 = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
63 = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C28 (upland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Smp. Date: 6/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C28 (upland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Hummocky Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.60178 Long: -71.99246 Datum: NAD 83
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_3/4	100		N/A	N/A	N/A	SAND	
3-16	10YR_5/6	100		N/A	N/A	N/A	SAND	
>16		100		N/A	N/A	N/A		Refusal/rocks

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks:	
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C28 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 2 x 2 = 4
4. _____				FAC 2 x 3 = 6
5. _____				FACU 4 x 4 = 16
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 8 (A) 26 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 2.80
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	10.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea tomentosa</i>	3		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	16	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Solidago altissima</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Rubus caesius</i>	20.5	X	FACU	
3. <i>Cornus canadensis</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Osmundastrum cinnamomeum</i>	3		FACW	
5. <i>Rubus allegheniensis</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
6. _____				
7. _____				Woody vine - All woody vines, regardless of height.
8. _____				
9. _____				Hydrophytic Vegetation Present? Yes
10. _____				
11. _____				
12. _____				
	57	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (If observed, list morphological adaptations below).
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C28 (wetland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester State: MA Smp. Date: 6/18/2020
 Applicant/Owner: National Grid Sampling Point: Wetland C28 (wetland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Hummocky Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.60176 Long: -71.99229 Datum: NAD 83
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine emergent wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>Yes</u>
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>	
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/2	100		N/A	N/A	N/A	LOAMY_SAND	
2-6	10YR_4/2	100		N/A	N/A	N/A	LOAMY_SAND	
6-17		80	7.5YR_4/6	40	C	M	LOAMY_SAND	6/10GB
>17		100		N/A	N/A	N/A		Refusal

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>Yes</u>
--------------------------------------------------------------------------	---------------------------------

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C28 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 5 x 2 = 10
4. _____				FAC 1 x 3 = 3
5. _____				FACU 1 x 4 = 4
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 7 (A) 17 (B)
8. _____				Prevalence Index = B/A = 2.72
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium corymbosum</i>	3		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	26	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago rigida</i>	10.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Onoclea sensibilis</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	34	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Other



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-29-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-29-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.60104 Long: -71.98898 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary and only one secondary indicator of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_3/2	100		N/A	N/A	N/A	LOAM	
8-12	10YR_4/3	100		N/A	N/A	N/A	LOAM	Auger refusal at 12in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>12</u>		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C-29-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. Ilex verticillata	20.5	X	FACW	
2. Kalmia angustifolia	20.5	X	FAC	
3. Spiraea alba	3		FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	44	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. Osmunda claytoniana	38	X	FAC	
2. Parathelypteris noveboracensis	20.5	X	FAC	
3. Onoclea sensibilis	10.5		FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	69	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 4 (A)

Dominants across all strata: 4 (B)

% Dominants OBL, FACW, FAC: 100.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL _____	x 1 =	_____
FACW _____	x 2 =	_____
FAC _____	x 3 =	_____
FACU _____	x 4 =	_____
UPL _____	x 5 =	_____
Sum: _____ (A)		_____ (B)
Prevalence Index = B/A =		_____

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-29-WET

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-29-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.60113 Long: -71.98908 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_3/2	97	10YR_3/6	3	C	M	LOAM	Auger refusal at 8in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>	Depth (inches): <u>8</u>	<u>Yes</u>	
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: C-29-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <i>Spiraea alba</i>	63	X	FACW	
2. <i>Kalmia angustifolia</i>	3		FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	66	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Onoclea sensibilis</i>	63	X	FACW	
2. <i>Solidago gigantea</i>	38	X	FACW	
3. <i>Doellingeria umbellata</i>	3		FACW	
4. <i>Ulmus alata</i>	3		UPL	
5. <i>Pteridium aquilinum</i>	3		FACU	
6. <i>Rubus hispidus</i>	3		FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	113	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C30 (upland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Smp. Date: 6/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C30 (upland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.59983 Long: -71.98530 Datum: NAD 83
 Soil Map Unit: Searsport loamy sand, 0 to 3 percent slopes NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2		100		N/A	N/A	N/A		Organics
2-4	10YR_3/3	100		N/A	N/A	N/A	SAND	
4-16+	5YR_4/4	100		N/A	N/A	N/A	SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C30 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 3 x 2 = 6
3. _____				FAC 2 x 3 = 6
4. _____				FACU 0 x 4 = 0
5. _____				UPL 2 x 5 = 10
6. _____				Sum: 7 (A) 22 (B)
7. _____				Prevalence Index = B/A = 2.78
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Cornus alba</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium corymbosum</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	58	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	38	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Onoclea sensibilis</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmunda claytoniana</i>	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago rugosa</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	54	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. <i>Celastrus orbiculatus</i>	10.5		UPL	<input type="checkbox"/> Yes
2. _____				
3. _____				
4. _____				
5. _____				
	10	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C30 (wetland plot)

Project Site: A1/B2 Line City/County: Gardner / Worcester Smp. Date: 6/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C30 (wetland plot)
 Investigator(s): Tim Sullivan and Nicole Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Hummocky Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.59988 Long: -71.98547 Datum: NAD 83
 Soil Map Unit: Searsport loamy sand, 0 to 3 percent slopes NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2		100		N/A	N/A	N/A		Organics
2-10	10YR_4/2	100		N/A	N/A	N/A	SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input checked="" type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>10</u>			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C30 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 4 x 2 = 8
3. _____				FAC 1 x 3 = 3
4. _____				FACU 1 x 4 = 4
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 6 (A) 15 (B)
7. _____				Prevalence Index = B/A = 2.20
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Vaccinium corymbosum</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Cornus alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	34	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Impatiens capensis</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago rigida</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	86	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Upl 63

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 9/22/2020
Applicant/Owner: National Grid State: MA Sampling Point: Upl 63
Investigator(s): J. Quattrocchi Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat: 42.59804 Long: -71.98364 Datum: GCS WGS 1984
Soil Map Unit: NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? - Remarks:
Are Normal Circumstances present? - No If needed, explain any answers in Remarks:
Are Vegetation - Yes, Soil - Yes, or Hydrology - Yes significantly disturbed? Remarks:
Are Vegetation - , Soil - , or Hydrology - naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix Color (moist), %, Redox Features Color (moist), %, Type, Loc, Texture, Remarks. Includes profile description and data rows.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? -

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Upl 63

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 0.0 x 2 = 0.0
4. _____				FAC 0.0 x 3 = 0.0
5. _____				FACU 82.0 x 4 = 328.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 82.0 (A) 328.0 (B)
8. _____				Prevalence Index = B/A = 4.00
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Reynoutria japonica	20.5	X	FACU	Dominance Test is > 50%
2. _____				Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	20	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Alliaria petiolata	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Parthenocissus quinquefolia	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Trifolium repens	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	61	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B63 wet

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 9/22/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B63 wet
 Investigator(s): J. Quattrocchi Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: -0.53342 Long: 144.95239 Datum: GCS WGS 1984
 Soil Map Unit: _____ NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? - Remarks: _____
 Are Normal Circumstances present? - If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil -, or Hydrology - significantly disturbed? Remarks: Row mowed
 Are Vegetation -, Soil -, or Hydrology - naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>-</u>
Water Table Present?	<u>X</u>	Depth (inches): <u>9</u>		
Saturation Present?	<u>X</u>	Depth (inches): <u>Surface</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: _____

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 2/1	100		N/A	N/A	N/A	MUCKY PEAT	
6-10	10YR 2/1	100		N/A	N/A	N/A	FINE SANDY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?	<u>Yes</u>
Type: <u>Rock</u>		
Depth (inches): <u>10</u>	Remarks: _____	

VEGETATION - Use scientific names of plants.



Sampling Point: B63 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 27.0 x 2 = 54.0
4. _____				FAC 3.0 x 3 = 9.0
5. _____				FACU 0.0 x 4 = 0.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 30.0 (A) 63.0 (B)
8. _____				Prevalence Index = B/A = 2.10
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Spiraea alba	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Onoclea sensibilis	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Rubus hispidus	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Impatiens capensis	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Acer rubrum	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	30	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Upl 61

Project Site: AQ1B2 City/County: Gardner / Worcester State: MA Samp. Date: 9/22/2020
 Applicant/Owner: _____ Sampling Point: Upl 61
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: 42.59580 Long: -71.98168 Datum: GCS WGS 1984
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>-</u>	
Wetland Hydrology Present? <u>-</u>	
Remarks: _____	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>-</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: _____	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: _____	

VEGETATION - Use scientific names of plants.



Sampling Point: Upl 61

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>0</u> (A) # Dominants across all strata: <u>0</u> (B) % Dominants OBL, FACW, FAC: <u> </u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>0.0</u> x 2 = <u>0.0</u> FAC <u>0.0</u> x 3 = <u>0.0</u> FACU <u>0.0</u> x 4 = <u>0.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>0.0</u> (A) <u>0.0</u> (B) Prevalence Index = B/A = <u> </u>	
Sapling Stratum (Plot size: <u>30 ft</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____					
	<u>0</u>	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____					
	<u>0</u>	= Total Cover			Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5 ft</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____					
	<u>0</u>	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____					
	<u>0</u>	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
	<u>0</u>	= Total Cover			
Hydrophytic Vegetation Present? <u> No </u>					

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 9/22/2020
 Applicant/Owner: _____ State: MA Sampling Point: 61
 Investigator(s): J. Quattriccio Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: 42.59587 Long: -71.98168 Datum: GCS WGS 1984
 Soil Map Unit: _____ NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? No Remarks: Dry year
 Are Normal Circumstances present? No If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Row

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-2	10YR 2/2	80		N/A	N/A	N/A	FINE SANDY LOAM
0-2	10YR 3/6	20		N/A	N/A	N/A	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.							
² Location: PL=Pore Lining, M=Matrix.							
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed):				Hydric Soil Present?			
Type: <u>Rock</u>				<u>-</u>			
Depth (inches): <u>2</u>							
Remarks:							

VEGETATION - Use scientific names of plants.



Sampling Point: 61

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 7 (A)
2. _____				# Dominants across all strata: 9 (B)
3. _____				% Dominants OBL, FACW, FAC: 77.78% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 47.5 x 2 = 95.0
4. _____				FAC 6.0 x 3 = 18.0
5. _____				FACU 3.0 x 4 = 12.0
6. _____				UPL 10.5 x 5 = 52.5
7. _____				Sum: 67.0 (A) 177.5 (B)
8. _____				Prevalence Index = B/A = 2.65
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	31	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Impatiens capensis</i>	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Solidago rugosa</i>	3	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Toxicodendron radicans</i>	3	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Osmundastrum cinnamomeum</i>	3	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Rubus allegheniensis</i>	3	X	FACU	
6. <i>Rubus hispidus</i>	3	X	FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	25	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. <i>Celastrus orbiculatus</i>	10.5		UPL	
2. _____				
3. _____				
4. _____				
5. _____				
	10	= Total Cover		
				Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-16-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/2/2020
 Applicant/Owner: National Grid State: MA Sampling Point: D-16-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.59295 Long: -71.97887 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? <u> </u> Depth (inches): <u>N/A</u> Water Table Present? <u> </u> Depth (inches): <u>N/A</u> Saturation Present? <u> </u> Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_3/1	100		N/A	N/A	N/A	LOAM	Auger refusal at 2in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Boulder</u> Depth (inches): <u>2</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: D-16-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Juniperus communis	63	X	FACU	_____ Dominance Test is > 50%
2. Ilex verticillata	10.5		FACW	_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	73	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus flagellaris	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Gaultheria procumbens	20.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Cornus canadensis	20.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	104	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-16-WET

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 11/2/2020
 Applicant/Owner: National Grid Section, Township, Range: N/A Sampling Point: D-16-WET
 Investigator(s): C. Cyrus Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.59296 Long: -71.97902 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PFO
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR_2/1	100		N/A	N/A	N/A	MUCK	Auger refusal at 10in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>		<u>Yes</u>	
Depth (inches): <u>10</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D-16-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Lyonia ligustrina</i>	63	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Spiraea alba</i>	38	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Juniperus communis</i>	3		FACU	<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <i>Quercus rubra</i>	3		FACU	<input type="checkbox"/> Morphological Adaptations
5. _____				
6. _____				
7. _____				
8. _____				
	<u>107</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	85.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	20.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>106</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) is present with all dominant species across all strata FACW or wetter; parameter is met. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-15-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/2/2020
 Applicant/Owner: National Grid State: MA Sampling Point: D-15-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.59275 Long: -71.97832 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_2/1	100		N/A	N/A	N/A	LOAM	
5-10	10YR_5/2	100		N/A	N/A	N/A	SILT_LOAM	Auger refusal at 10in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>No</u>	
Depth (inches): <u>10</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: D-15-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____	_____	_____	_____	# Dominants across all strata: <u>3</u> (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: <u> </u> Multiply By: <u> </u>
2. _____	_____	_____	_____	OBL <u> </u> x 1 = <u> </u>
3. _____	_____	_____	_____	FACW <u> </u> x 2 = <u> </u>
4. _____	_____	_____	_____	FAC <u> </u> x 3 = <u> </u>
5. _____	_____	_____	_____	FACU <u> </u> x 4 = <u> </u>
6. _____	_____	_____	_____	UPL <u> </u> x 5 = <u> </u>
7. _____	_____	_____	_____	Sum: <u> </u> (A) <u> </u> (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = <u> </u>
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Kalmia angustifolia</i>	10.5		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Juniperus communis</i>	10.5		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____	_____	_____	_____	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>59</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus flagellaris</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Cornus canadensis</i>	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Gaultheria procumbens</i>	20.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago caesia</i>	10.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____	_____	_____	_____	Woody vine - All woody vines, regardless of height.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>132</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u> </u> <u>No</u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) is met with >50% of dominant species across all strata FACW or wetter; parameter is met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-15-WET

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 11/2/2020
 Applicant/Owner: National Grid Section, Township, Range: N/A Sampling Point: D-15-WET
 Investigator(s): C. Cyrus Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.59266 Long: -71.97812 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u>X</u> Depth (inches): <u>1</u>	<u>Yes</u>	
Water Table Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Saturation Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR_3/2	100		N/A	N/A	N/A	MUCK	Auger refusal at 12in
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators:					Indicators for Problematic Hydric Soils ³ :			
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)				
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)				
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)				
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)				
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)				
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)				
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)				
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)				
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed):					Hydric Soil Present?			
Type: <u>Gravel</u>					<u>Yes</u>			
Depth (inches): <u>12</u>								
Remarks:								

VEGETATION - Use scientific names of plants.



Sampling Point: D-15-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	76	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus flagellaris</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Athyrium asplenoides</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Scirpus cyperinus</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	114	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-13-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/2/2020
 Applicant/Owner: National Grid State: MA Sampling Point: D-13-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.59207 Long: -71.97534 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? <u> </u> Depth (inches): <u>N/A</u> Water Table Present? <u> </u> Depth (inches): <u>N/A</u> Saturation Present? <u> </u> Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_4/3	100		N/A	N/A	N/A	GRAVELLY_LOAM	Auger refusal at 2in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>2</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: D-13-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	20.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Rubus pensilvanicus</i>	10.5	X	FACU	_____ Prevalence Index is <= 3.0
3. <i>Viburnum dentatum</i>	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	34	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Solidago caesia</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Athyrium asplenioides</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	86	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-13-WET

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 11/2/2020
 Applicant/Owner: National Grid Sampling Point: D-13-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.59220 Long: -71.97558 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	Yes		
Wetland Hydrology Present?	Yes		
Remarks: All parameters are met. Area is classified as a palustrine emergent wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<input checked="" type="checkbox"/> Depth (inches): 1	Yes	
Water Table Present?	<input checked="" type="checkbox"/> Depth (inches): Surface		
Saturation Present?	<input checked="" type="checkbox"/> Depth (inches): Surface		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/1	100		N/A	N/A	N/A	MUCK	Auger refusal at 2in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input checked="" type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed): Type: Bedrock Depth (inches): 2		Hydric Soil Present?	
		Yes	
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: D-13-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____	_____	_____	_____	# Dominants across all strata: <u>3</u> (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: <u> </u> Multiply By: <u> </u>
2. _____	_____	_____	_____	OBL <u> </u> x 1 = <u> </u>
3. _____	_____	_____	_____	FACW <u> </u> x 2 = <u> </u>
4. _____	_____	_____	_____	FAC <u> </u> x 3 = <u> </u>
5. _____	_____	_____	_____	FACU <u> </u> x 4 = <u> </u>
6. _____	_____	_____	_____	UPL <u> </u> x 5 = <u> </u>
7. _____	_____	_____	_____	Sum: <u> </u> (A) <u> </u> (B)
8. _____	_____	_____	_____	Prevalence Index = B/A = <u> </u>
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Spiraea alba</i>	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Frangula alnus</i>	3		FAC	<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>54</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Typha latifolia</i>	85.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	20.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Thelypteris palustris</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Osmundastrum cinnamomeum</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____	_____	_____	_____	Woody vine - All woody vines, regardless of height.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>112</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u> </u> Yes
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) is present with all dominant species across all strata FACW or wetter. Parameter is met. Dominance Test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-12-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/2/2020
 Applicant/Owner: National Grid State: MA Sampling Point: D-12-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.59000 Long: -71.97015 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_3/1	100		N/A	N/A	N/A	LOAM	
2-6	10YR_6/2	100		N/A	N/A	N/A	GRAVELLY_SANDY_LOA M	Auger refusal at 6in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>		<u>No</u>	
Depth (inches): <u>6</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D-12-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>40.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. Juniperus communis	63	X	FACU	
2. Lyonia ligustrina	38	X	FACW	
3. Ilex verticillata	20.5		FACW	
4. Kalmia angustifolia	20.5		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
	142	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. Rubus flagellaris	20.5	X	FACU	
2. Osmundastrum cinnamomeum	10.5	X	FACW	
3. Gaultheria procumbens	10.5	X	FACU	
4. Trientalis borealis	3		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	44	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-12-WET

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 11/2/2020
 Applicant/Owner: National Grid Section, Township, Range: N/A Sampling Point: D-12-WET
 Investigator(s): C. Cyrus Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.58998 Long: -71.97009 Datum: WGS 1984
 Soil Map Unit: Becket-Skerry association, 0 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/1	100		N/A	N/A	N/A	MUCK	Auger refusal at 6in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>Yes</u>	
Depth (inches): <u>6</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D-12-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Ilex verticillata	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				Definitions of Vegetation Strata:
8. _____				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
	20	= Total Cover		Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
Herb Stratum (Plot size: 5 ft)				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
1. Rubus hispidus	38	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
2. Carex bromoides	20.5	X	FACW	
3. Juncus effusus	10.5		OBL	Woody vine - All woody vines, regardless of height.
4. Solidago rugosa	3		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	72	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) present with all dominant species across all strata FACW or wetter. Parameter is met. Dominance test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-11-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/2/2020
 Applicant/Owner: National Grid State: MA Sampling Point: D-11-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.58933 Long: -71.96876 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_3/1	97		N/A	N/A	N/A	LOAM	Auger refusal at 8in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>	Depth (inches): <u>8</u>	<u>No</u>	
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: D-11-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia angustifolia</i>	63	X	FAC	_____ Dominance Test is > 50%
2. <i>Juniperus communis</i>	20.5		FACU	_____ Prevalence Index is <= 3.0
3. <i>Kalmia latifolia</i>	20.5		FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	104	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Gaultheria procumbens</i>	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pteridium aquilinum</i>	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	31	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D-11-WET

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 11/2/2020
 Applicant/Owner: National Grid Section, Township, Range: N/A Sampling Point: D-11-WET
 Investigator(s): C. Cyrus Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR R Lat: 42.58922 Long: -71.96864 Datum: WGS 1984
 Soil Map Unit: Bucksport and Wonsqueak mucks, 0 to 2 percent slopes NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u>X</u> Depth (inches): <u>1</u>	<u>Yes</u>	
Water Table Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Saturation Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR_2/1	100		N/A	N/A	N/A	MUCK	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:		<u>Yes</u>	
Depth (inches):			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D-11-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	20.5		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Kalmia angustifolia</i>	20.5		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	104	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Carex folliculata</i>	38	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	101	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D10 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 10/8/2020
 Applicant/Owner: National Grid State: MA Sampling Point: D10 (upland plot)
 Investigator(s): Emily Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.58320 Long: -71.96027 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	7.5YR_3/4	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 10 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>No</u>	
Depth (inches): _____			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D10 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <i>Pinus strobus</i>	10.5	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
2. <i>Acer rubrum</i>	3	X	FAC	
3.				
4.				
5.				
6.				
7.				
8.				
	<u>13</u>	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)				
1. <i>Acer rubrum</i>	0		FAC	Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>13.5</u> x 2 = <u>27.0</u> FAC <u>40.0</u> x 3 = <u>120.0</u> FACU <u>51.5</u> x 4 = <u>206.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>105.0</u> (A) <u>353.0</u> (B) Prevalence Index = B/A = <u>3.36</u>
2.				
3.				
4.				
5.				
6.				
7.				
8.				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <i>Kalmia angustifolia</i>	20.5	X	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. <i>Vaccinium corymbosum</i>	3		FACW	
3. <i>Viburnum dentatum</i>	3		FAC	
4. <i>Frangula alnus</i>	3		FAC	
5. <i>Fagus grandifolia</i>	3		FACU	
6.				
7.				
8.				
	<u>32</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <i>Gaultheria procumbens</i>	38	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Kalmia angustifolia</i>	10.5		FAC	
3. <i>Rubus hispidus</i>	10.5		FACW	
4. <i>Vaccinium corymbosum</i>	0		FACW	
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
	<u>59</u>	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				
1.				Hydrophytic Vegetation Present? <u>No</u>
2.				
3.				
4.				
5.				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D10 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D10 (wetland plot)
 Investigator(s): Emily Martin Local relief (concave, convex, none): Flat Slope (%): <1%
 Landform (hillslope, terrace, etc.): Depression Subregion (LRR or MLRA): LRR Lat: 42.58307 Long: -71.96024 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-4	10YR_2/2	100		N/A	N/A	FINE_SANDY_LOAM	Many fine roots. Rock refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D10 (wetland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <u>Acer rubrum</u>	10.5	X	FAC	# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	10	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>10.5</u> x 1 = <u>10.5</u>
2. _____				FACW <u>34.0</u> x 2 = <u>68.0</u>
3. _____				FAC <u>22.5</u> x 3 = <u>67.5</u>
4. _____				FACU <u>3.0</u> x 4 = <u>12.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>70.0</u> (A) <u>158.0</u> (B)
7. _____				
8. _____				
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <u>Vaccinium corymbosum</u>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
2. <u>Lyonia ligustrina</u>	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <u>Frangula alnus</u>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. <u>Quercus rubra</u>	3		FACU	<input type="checkbox"/> Morphological Adaptations
5. <u>Viburnum dentatum</u>	3		FAC	
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	40	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Juncus effusus</u>	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <u>Rubus hispidus</u>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <u>Solidago rugosa</u>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <u>Frangula alnus</u>	3		FAC	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	19	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D9 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D9 (upland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.58254 Long: -71.95966 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	2.5Y_4/4	100		N/A	N/A	N/A	SANDY_LOAM	Rock refusal at 4 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: _____		Hydric Soil Present?	<u>No</u>
Depth (inches): _____			
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D9 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>10</u> (B) % Dominants OBL, FACW, FAC: <u>30.00%</u> (A/B)
1. <u>Acer rubrum</u>	10.5	X	FAC	
2. <u>Pinus strobus</u>	3	X	FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	13	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>6.0</u> x 2 = <u>12.0</u> FAC <u>21.0</u> x 3 = <u>63.0</u> FACU <u>30.0</u> x 4 = <u>120.0</u> UPL <u>3.0</u> x 5 = <u>15.0</u> Sum: <u>60.0</u> (A) <u>210.0</u> (B) Prevalence Index = B/A = <u>3.50</u>
1. <u>Quercus rubra</u>	3	X	FACU	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	3	= Total Cover		
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <u>Frangula alnus</u>	10.5	X	FAC	
2. <u>Kalmia latifolia</u>	10.5	X	FACU	
3. <u>Juniperus communis</u>	10.5	X	FACU	
4. <u>Spiraea alba</u>	3		FACW	
5. _____				
6. _____				
7. _____				
8. _____				
	34	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <u>Juniperus communis</u>	3	X	FACU	
2. <u>Celastrus orbiculatus</u>	3	X	UPL	
3. <u>Hieracium_SP</u>	3	X	NULL	
4. <u>Rubus hispidus</u>	3	X	FACW	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	12	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D9 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D9 (wetland plot)
 Investigator(s): Emily Martin Local relief (concave, convex, none): Flat Slope (%): <1%
 Landform (hillslope, terrace, etc.): Depression Subregion (LRR or MLRA): LRR Lat: 42.58255 Long: -71.95978 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	FINE SANDY LOAM	
3-6	10YR_3/1	93	10YR_5/4	2	C	M	FINE SANDY LOAM	
			2.5Y_4/3	5	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: D9 (wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. <i>Acer rubrum</i>	10.5	X	FAC	# Dominants OBL, FACW, FAC: 4 (A)
2. _____	_____	_____	_____	# Dominants across all strata: 4 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	10	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____	_____	_____	_____	FACW 24.0 x 2 = 48.0
3. _____	_____	_____	_____	FAC 65.0 x 3 = 195.0
4. _____	_____	_____	_____	FACU 3.0 x 4 = 12.0
5. _____	_____	_____	_____	UPL 0.0 x 5 = 0.0
6. _____	_____	_____	_____	Sum: 92.0 (A) 255.0 (B)
7. _____	_____	_____	_____	Prevalence Index = B/A = 2.77
8. _____	_____	_____	_____	
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Frangula alnus</i>	38	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	10.5		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Viburnum dentatum</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	54	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Frangula alnus</i>	10.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago altissima</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Betula populifolia</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____	_____	_____	_____	Woody vine - All woody vines, regardless of height.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	27	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____	_____	_____	_____	<input type="checkbox"/>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D8 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Sampling Point: D8 (upland plot)
 Investigator(s): Emily Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.58157 Long: -71.95834 Datum: _____
 Soil Map Unit: Peru fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D8 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <u>Betula populifolia</u>	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>75.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
		10	= Total Cover	
Sapling Stratum (Plot size: <u>30 ft</u>)				
1. <u>Frangula alnus</u>	10.5	X	FAC	Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>0.0</u> x 2 = <u>0.0</u> FAC <u>87.0</u> x 3 = <u>261.0</u> FACU <u>0.0</u> x 4 = <u>0.0</u> UPL <u>10.5</u> x 5 = <u>52.5</u> Sum: <u>97.5</u> (A) <u>313.5</u> (B) Prevalence Index = B/A = <u>3.22</u>
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
		10	= Total Cover	
Shrub Stratum (Plot size: <u>15 ft</u>)				
1. _____				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
		0	= Total Cover	
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u>Solidago rugosa</u>	63	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <u>Frangula alnus</u>	3		FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
		66	= Total Cover	
Woody Vines (Plot size: <u>30 ft</u>)				
1. <u>Celastrus orbiculatus</u>	10.5		UPL	Hydrophytic Vegetation Present? <u>No</u>
2. _____				
3. _____				
4. _____				
5. _____				
		10	= Total Cover	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D8 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Sampling Point: D8 (wetland plot)
 Investigator(s): Emily Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.58159 Long: -71.95848 Datum: _____
 Soil Map Unit: Peru fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	<u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present?	<u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks: _____				

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	PEAT	
3-6	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
6-10	10YR_3/1	100	10YR_5/6	5	C	M	FINE_SANDY_LOAM	
10-20	10YR_3/4	100	10YR_5/2	10	D	M	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?	<u>Yes</u>
Type: _____ Depth (inches): _____		
Remarks: _____		

VEGETATION - Use scientific names of plants.



Sampling Point: D8 (wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 16.5 x 2 = 33.0
4. _____				FAC 20.5 x 3 = 61.5
5. _____				FACU 3.0 x 4 = 12.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 40.0 (A) 106.5 (B)
8. _____				Prevalence Index = B/A = 2.66
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Vaccinium corymbosum	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	31	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Parthenocissus quinquefolia	3	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	3	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Thelypteris palustris	3	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	9	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D7 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 10/8/2020
 Applicant/Owner: National Grid State: MA Sampling Point: D7 (upland plot)
 Investigator(s): Emily Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.58130 Long: -71.95806 Datum: _____
 Soil Map Unit: Peru fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil Yes, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Maintained utility row

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
8-16	10YR_3/4	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
16-20	2.5Y_6/3	100		N/A	N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>Yes</u>	
Depth (inches): _____			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D7 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <u>Acer rubrum</u>	10.5	X	FAC	# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. <u>Quercus rubra</u>	3	X	FACU	# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>60.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	13	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>0.0</u> x 2 = <u>0.0</u>
3. _____				FAC <u>37.0</u> x 3 = <u>111.0</u>
4. _____				FACU <u>13.5</u> x 4 = <u>54.0</u>
5. _____				UPL <u>3.0</u> x 5 = <u>15.0</u>
6. _____				Sum: <u>53.5</u> (A) <u>180.0</u> (B)
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index = B/A = <u>3.36</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <u>Frangula alnus</u>	3	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	3	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Solidago rugosa</u>	20.5	X	FAC	
2. <u>Rubus idaeus</u>	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <u>Celastrus orbiculatus</u>	3		UPL	
4. <u>Frangula alnus</u>	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
5. _____				
6. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				Woody vine - All woody vines, regardless of height.
	37	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D7 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D7 (wetland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.58124 Long: -71.95796 Datum: _____
 Soil Map Unit: Peru fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR_2/1	100		N/A	N/A	N/A	LOAM	
10-12	10YR_2/1	70	10YR_5/1	30	RM	M		Rock refusal at 12 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: D7 (wetland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <u>Acer rubrum</u>	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	10	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>13.5</u> x 1 = <u>13.5</u> FACW <u>13.5</u> x 2 = <u>27.0</u> FAC <u>27.0</u> x 3 = <u>81.0</u> FACU <u>0.0</u> x 4 = <u>0.0</u> UPL <u>3.0</u> x 5 = <u>15.0</u> Sum: <u>57.0</u> (A) <u>136.5</u> (B) Prevalence Index = B/A = <u>2.39</u>	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <u>Frangula alnus</u>	10.5	X	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>Viburnum dentatum</u>	3		FAC		
3. <u>Vaccinium corymbosum</u>	3		FACW		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	16	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <u>Onoclea sensibilis</u>	10.5	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <u>Juncus effusus</u>	10.5	X	OBL		
3. <u>Frangula alnus</u>	3		FAC		
4. <u>Persicaria sagittata</u>	3		OBL		
5. <u>Celastrus orbiculatus</u>	3		UPL		
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	30	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D6 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D6 (upland plot)
 Investigator(s): Emily Martin Local relief (concave, convex, none): Flat Slope (%): <1%
 Landform (hillslope, terrace, etc.): Depression Subregion (LRR or MLRA): LRR Lat: 42.57960 Long: -71.95610 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row. Plot in access road
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present? <u>No</u>	
Surface Water Present? _____	Depth (inches): <u>N/A</u>		
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-5	10YR_4/4	100		N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 5 inches. Soil compacted from road

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present? <u>No</u>	
Type: _____	Depth (inches): _____		
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D6 and D5 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>6</u> (B) % Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
1. <u>Quercus rubra</u>	<u>10.5</u>	<u>X</u>	<u>FACU</u>	
2. <u>Betula populifolia</u>	<u>3</u>		<u>FAC</u>	
3. <u>Pinus strobus</u>	<u>3</u>		<u>FACU</u>	
4. <u>Populus deltoides</u>	<u>3</u>		<u>FAC</u>	
5. _____				
6. _____				
7. _____				
8. _____				
	<u>19</u>	<u>= Total Cover</u>		
Sapling Stratum (Plot size: <u>30 ft</u>)				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>3.0</u> x 2 = <u>6.0</u> FAC <u>9.0</u> x 3 = <u>27.0</u> FACU <u>22.5</u> x 4 = <u>90.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>34.5</u> (A) <u>123.0</u> (B) Prevalence Index = B/A = <u>3.57</u>
1. <u>Acer rubrum</u>	<u>3</u>	<u>X</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>3</u>	<u>= Total Cover</u>		
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	<u>= Total Cover</u>		
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <u>Achillea millefolium</u>	<u>3</u>	<u>X</u>	<u>FACU</u>	
2. <u>Trifolium repens</u>	<u>3</u>	<u>X</u>	<u>FACU</u>	
3. <u>Plantago major</u>	<u>3</u>	<u>X</u>	<u>FACU</u>	
4. <u>Rubus hispidus</u>	<u>3</u>	<u>X</u>	<u>FACW</u>	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>12</u>	<u>= Total Cover</u>		
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	<u>= Total Cover</u>		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D6 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D6 (wetland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.57956 Long: -71.95620 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: PFO
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/>	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input type="checkbox"/> Microtopographic Relief (D4)	
	<input type="checkbox"/>	<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>
Saturation Present?	<u>X</u>	Depth (inches):	<u>Surface</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		Wetland Hydrology Present? <u>Yes</u>	
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/2	100		N/A	N/A	N/A	SILT_LOAM	Rock refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/>	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/>	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/>	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/>	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/>	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/>	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/>	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/>	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/>		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/>		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/>		<input checked="" type="checkbox"/> X	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/>		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present? <u>Yes</u>		
Type:	<u> </u>			
Depth (inches):	<u> </u>			
Remarks: _____				

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D6 (wetland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <u>Acer rubrum</u>	38	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>6</u> (A) # Dominants across all strata: <u>7</u> (B) % Dominants OBL, FACW, FAC: <u>85.71%</u> (A/B)	
2. <u>Pinus strobus</u>	3		FACU		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	41	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>26.5</u> x 2 = <u>53.0</u> FAC <u>51.5</u> x 3 = <u>154.5</u> FACU <u>6.0</u> x 4 = <u>24.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>84.0</u> (A) <u>231.5</u> (B) Prevalence Index = B/A = <u>2.76</u>	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <u>Vaccinium corymbosum</u>	20.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>Frangula alnus</u>	10.5	X	FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	31	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <u>Solanum dulcamara</u>	3	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <u>Onoclea sensibilis</u>	3	X	FACW		
3. <u>Spiraea alba</u>	3	X	FACW		
4. <u>Aralia nudicaulis</u>	3	X	FACU		
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	12	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D5 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid State: MA Sampling Point: D5 (upland plot)
 Investigator(s): Emily Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.57960 Long: -71.95610 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row. Plot in access road
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-5	10YR_4/4	100		N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 5 inches. Soil compacted from road

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D6 and D5 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <u>Quercus rubra</u>	10.5	X	FACU	# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. <u>Betula populifolia</u>	3		FAC	# Dominants across all strata: <u>6</u> (B)
3. <u>Pinus strobus</u>	3		FACU	% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. <u>Populus deltoides</u>	3		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
	19	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. <u>Acer rubrum</u>	3	X	FAC	OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>3.0</u> x 2 = <u>6.0</u>
3. _____				FAC <u>9.0</u> x 3 = <u>27.0</u>
4. _____				FACU <u>22.5</u> x 4 = <u>90.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>34.5</u> (A) <u>123.0</u> (B)
7. _____				Prevalence Index = B/A = <u>3.57</u>
8. _____				
	3	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input type="checkbox"/> Dominance Test is > 50%
1. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Achillea millefolium</u>	3	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <u>Trifolium repens</u>	3	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <u>Plantago major</u>	3	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <u>Rubus hispidus</u>	3	X	FACW	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	12	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D5 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D5 (wetland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.57964 Long: -71.95607 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR_2/1	100		N/A	N/A	N/A	SILT_LOAM	Many fine roots. Rock refusal at 12 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D5 (wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>37.0</u> x 2 = <u>74.0</u>
3. _____				FAC <u>9.0</u> x 3 = <u>27.0</u>
4. _____				FACU <u>0.0</u> x 4 = <u>0.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>46.0</u> (A) <u>101.0</u> (B)
7. _____				Prevalence Index = B/A = <u>2.20</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	20.5	X	FACW	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Salix_SP</i>	10.5	X	NULL	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Vaccinium corymbosum</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>40</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Iris_SP</i>	38	X	NULL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Impatiens capensis</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Onoclea sensibilis</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solanum dulcamara</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>54</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: A1B2 City/County: Gardner / Worcester Smp. Date: 10/8/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C45 (upland plot)
 Investigator(s): Emily Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.57859 Long: -71.95487 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_2/1	100		N/A	N/A	N/A	PEAT	
1-12	10YR_5/6	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 12 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: _____		Hydric Soil Present?	<u>No</u>
Depth (inches): _____			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C44 and C45 (upland)

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <i>Pinus strobus</i>	10.5	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>7</u> (B) % Dominants OBL, FACW, FAC: <u>42.86%</u> (A/B)	
2. <i>Acer rubrum</i>	3	X	FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>13</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>13.5</u> x 2 = <u>27.0</u> FAC <u>9.0</u> x 3 = <u>27.0</u> FACU <u>61.0</u> x 4 = <u>244.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>83.5</u> (A) <u>298.0</u> (B) Prevalence Index = B/A = <u>3.57</u>	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <i>Fagus grandifolia</i>	10.5	X	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <i>Vaccinium corymbosum</i>	3	X	FACW		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>13</u>	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <i>Gaultheria procumbens</i>	20.5	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Pteridium aquilinum</i>	10.5	X	FACU		
3. <i>Rubus hispidus</i>	10.5	X	FACW		
4. <i>Frangula alnus</i>	3		FAC		
5. <i>Quercus rubra</i>	3		FACU		
6. <i>Pinus strobus</i>	3		FACU		
7. <i>Fagus grandifolia</i>	3		FACU		
8. <i>Betula populifolia</i>	3		FAC		
9. _____					
10. _____					
11. _____					
12. _____					
	<u>56</u>	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1. _____				Hydrophytic Vegetation Present? <u>No</u>	
2. _____					
3. _____					
4. _____					
5. _____					
	<u>0</u>	= Total Cover			

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C45 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: C45 (wetland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.57866 Long: -71.95492 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
4-8	10YR_2/1	50	10YR_4/1	50	RM	N/A	FINE_SANDY_LOAM	Rock refusal at 8 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: C45 (wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 9.0 x 1 = 9.0
2. _____				FACW 40.0 x 2 = 80.0
3. _____				FAC 13.5 x 3 = 40.5
4. _____				FACU 0.0 x 4 = 0.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 62.5 (A) 129.5 (B)
7. _____				Prevalence Index = B/A = 2.07
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Lyonia ligustrina	3	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	13	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Doellingeria umbellata	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Symphyotrichum puniceum	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Scirpus cyperinus	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Persicaria sagittata	3		OBL	
6. Frangula alnus	3		FAC	
7. Onoclea sensibilis	3		FACW	
8. Thelypteris palustris	3		FACW	
9. _____				
10. _____				
11. _____				
12. _____				
	49	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		
				Hydrophytic Vegetation Present? Yes

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C44 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Sampling Point: C44 (upland plot)
 Investigator(s): Emily Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.57859 Long: -71.95487 Datum: _____
 Soil Map Unit: Pilsbury Peacham association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_2/1	100		N/A	N/A	N/A	PEAT	
1-12	10YR_5/6	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 12 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C44 and C45 (upland)

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <i>Pinus strobus</i>	10.5	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>7</u> (B) % Dominants OBL, FACW, FAC: <u>42.86%</u> (A/B)	
2. <i>Acer rubrum</i>	3	X	FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>13</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>13.5</u> x 2 = <u>27.0</u> FAC <u>9.0</u> x 3 = <u>27.0</u> FACU <u>61.0</u> x 4 = <u>244.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>83.5</u> (A) <u>298.0</u> (B) Prevalence Index = B/A = <u>3.57</u>	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <i>Fagus grandifolia</i>	10.5	X	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <i>Vaccinium corymbosum</i>	3	X	FACW		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>13</u>	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <i>Gaultheria procumbens</i>	20.5	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Pteridium aquilinum</i>	10.5	X	FACU		
3. <i>Rubus hispidus</i>	10.5	X	FACW		
4. <i>Frangula alnus</i>	3		FAC		
5. <i>Quercus rubra</i>	3		FACU		
6. <i>Pinus strobus</i>	3		FACU		
7. <i>Fagus grandifolia</i>	3		FACU		
8. <i>Betula populifolia</i>	3		FAC		
9. _____					
10. _____					
11. _____					
12. _____					
	<u>56</u>	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1. _____				Hydrophytic Vegetation Present? <u>No</u>	
2. _____					
3. _____					
4. _____					
5. _____					
	<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C44 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/8/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: C44 (wetland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.57856 Long: -71.95478 Datum: _____
 Soil Map Unit: Peru Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	<u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present?	<u>X</u>	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____				
Remarks: _____				

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input checked="" type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?	<u>Yes</u>
Type: _____		
Depth (inches): _____		
Remarks: _____		

VEGETATION - Use scientific names of plants.



Sampling Point: C44 (wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 51.5 x 1 = 51.5
2. _____				FACW 3.0 x 2 = 6.0
3. _____				FAC 9.0 x 3 = 27.0
4. _____				FACU 0.0 x 4 = 0.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 63.5 (A) 84.5 (B)
7. _____				Prevalence Index = B/A = 1.33
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Alnus incana</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Frangula alnus</i>	3	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Viburnum dentatum</i>	3	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	9	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Scirpus cyperinus</i>	38	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Carex lurida</i>	10.5		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Juncus effusus</i>	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Frangula alnus</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	54	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C43 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/7/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: C43 (upland plot)
 Investigator(s): Emily Martin Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Landform (hillslope, terrace, etc.): Depression Subregion (LRR or MLRA): LRR Lat: 42.57646 Long: -71.95235 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_3/4	100		N/A	N/A	N/A	FINE SANDY LOAM	
6-9	10YR_3/6	100		N/A	N/A	N/A	FINE SANDY LOAM	Rock refusal at 9 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C43 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <i>Quercus rubra</i>	3	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>6</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
2. <i>Acer rubrum</i>	3	X	FAC	
3.				
4.				
5.				
6.				
7.				
8.				
	6	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)				
1. <i>Acer rubrum</i>	3	X	FAC	Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>0.0</u> x 2 = <u>0.0</u> FAC <u>12.0</u> x 3 = <u>36.0</u> FACU <u>19.5</u> x 4 = <u>78.0</u> UPL <u>20.5</u> x 5 = <u>102.5</u> Sum: <u>52.0</u> (A) <u>216.5</u> (B) Prevalence Index = B/A = <u>4.16</u>
2.				
3.				
4.				
5.				
6.				
7.				
8.				
	3	= Total Cover		
Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <i>Frangula alnus</i>	3	X	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.				
3.				
4.				
5.				
6.				
7.				
8.				
	3	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <i>Dennstaedtia punctilobula</i>	20.5	X	UPL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Pteridium aquilinum</i>	10.5	X	FACU	
3. <i>Quercus rubra</i>	3		FACU	
4. <i>Solidago rugosa</i>	3		FAC	
5. <i>Plantago major</i>	3		FACU	
6.				
7.				
8.				
9.				
10.				
11.				
12.				
	40	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				
1.				
2.				
3.				
4.				
5.				
	0	= Total Cover		
				Hydrophytic Vegetation Present? <u>No</u>

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C43 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/7/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: C43 (wetland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.57637 Long: -71.95240 Datum: _____
 Soil Map Unit: Peru-Markow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present? <u>Yes</u>	
Surface Water Present? _____	Depth (inches): <u>N/A</u>		
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-2	10YR_3/2	100		N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 2 inches. Extremely Stony

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input checked="" type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present? <u>No</u>	
Type: _____	Depth (inches): _____		
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C43 (wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 31.0 x 2 = 62.0
3. _____				FAC 37.5 x 3 = 112.5
4. _____				FACU 3.0 x 4 = 12.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 71.5 (A) 186.5 (B)
7. _____				Prevalence Index = B/A = 2.61
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Viburnum dentatum</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Frangula alnus</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	21	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Frangula alnus</i>	10.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Spiraea alba</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Tsuga canadensis</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago rugosa</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. <i>Dryopteris intermedia</i>	3		FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	50	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes _____
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C42 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/7/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C42 (upland plot)
 Investigator(s): Emily Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.57609 Long: -71.95189 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
3-6	7.5YR_3/4	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C42 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <u>Acer rubrum</u>	<u>3</u>	<u>X</u>	<u>FAC</u>	# Dominants OBL, FACW, FAC: <u>5</u> (A)
2. <u>Pinus strobus</u>	<u>3</u>	<u>X</u>	<u>FACU</u>	# Dominants across all strata: <u>11</u> (B)
3. <u>Tsuga canadensis</u>	<u>3</u>	<u>X</u>	<u>FACU</u>	% Dominants OBL, FACW, FAC: <u>45.45%</u> (A/B)
4. <u>Fagus grandifolia</u>	<u>3</u>	<u>X</u>	<u>FACU</u>	
5. _____				
6. _____				
7. _____				
8. _____				
	<u>12</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. <u>Pinus strobus</u>	<u>3</u>	<u>X</u>	<u>FACU</u>	OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>10.5</u> x 2 = <u>21.0</u>
3. _____				FAC <u>19.5</u> x 3 = <u>58.5</u>
4. _____				FACU <u>36.0</u> x 4 = <u>144.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>66.0</u> (A) <u>223.5</u> (B)
7. _____				
8. _____				
	<u>3</u>	= Total Cover		Prevalence Index = B/A = <u>3.39</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <u>Frangula alnus</u>	<u>3</u>	<u>X</u>	<u>FAC</u>	<input type="checkbox"/> Dominance Test is > 50%
2. <u>Acer rubrum</u>	<u>3</u>	<u>X</u>	<u>FAC</u>	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>6</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Pteridium aquilinum</u>	<u>10.5</u>	<u>X</u>	<u>FACU</u>	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <u>Rubus hispidus</u>	<u>10.5</u>	<u>X</u>	<u>FACW</u>	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <u>Solidago rugosa</u>	<u>10.5</u>	<u>X</u>	<u>FAC</u>	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <u>Gaultheria procumbens</u>	<u>10.5</u>	<u>X</u>	<u>FACU</u>	Woody vine - All woody vines, regardless of height.
5. <u>Quercus rubra</u>	<u>3</u>		<u>FACU</u>	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>45</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C42 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/7/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: C42 (wetland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.57608 Long: -71.95180 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-3	10YR_2/1	100		N/A	N/A	FINE_SANDY_LOAM	Many fine roots
3-6	10YR_2/1	100		N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C42 (wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 13.5 x 1 = 13.5
2. _____				FACW 30.0 x 2 = 60.0
3. _____				FAC 13.5 x 3 = 40.5
4. _____				FACU 0.0 x 4 = 0.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 57.0 (A) 114.0 (B)
7. _____				Prevalence Index = B/A = 2.00
8. _____				
0 = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Vaccinium corymbosum	3	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
13 = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Typha latifolia	10.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Spiraea alba	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Rubus hispidus	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Symphyotrichum puniceum	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Frangula alnus	3		FAC	Woody vine - All woody vines, regardless of height.
6. Spiraea tomentosa	3		FACW	
7. Solidago gigantea	3		FACW	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
43 = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D4 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/7/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D4 (upland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.57569 Long: -71.95122 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_4/3	100		N/A	N/A	N/A	LOAMY_SAND	
5-8	7.5YR_4/6	100		N/A	N/A	N/A	LOAMY_SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D4 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>6</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
1. Pinus strobus	10.5	X	FACU	
2. Acer rubrum	3		FAC	
3. Quercus rubra	3		FACU	
4.				
5.				
6.				
7.				
8.				
			<u>16</u> = Total Cover	
Sapling Stratum (Plot size: <u>30 ft</u>)				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>51.5</u> x 2 = <u>103.0</u> FAC <u>12.0</u> x 3 = <u>36.0</u> FACU <u>30.0</u> x 4 = <u>120.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>93.5</u> (A) <u>259.0</u> (B) Prevalence Index = B/A = <u>2.77</u>
1. Pinus strobus	3	X	FACU	
2. Acer rubrum	3	X	FAC	
3.				
4.				
5.				
6.				
7.				
8.				
			<u>6</u> = Total Cover	
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. Vaccinium corymbosum	10.5	X	FACW	
2. Ilex verticillata	3		FACW	
3. Frangula alnus	3		FAC	
4. Quercus rubra	3		FACU	
5.				
6.				
7.				
8.				
			<u>19</u> = Total Cover	
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. Rubus hispidus	38	X	FACW	
2. Pteridium aquilinum	10.5	X	FACU	
3. Cornus canadensis	3		FAC	
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
			<u>51</u> = Total Cover	
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>Yes</u>
1.				
2.				
3.				
4.				
5.				
			<u>0</u> = Total Cover	

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D4 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/7/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D4 (wetland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.57565 Long: -71.95107 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> X	<input type="checkbox"/>	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/>	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u> </u> Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	<u> </u> Depth (inches): <u>N/A</u>		
Saturation Present?	<input checked="" type="checkbox"/> X <u> </u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR_2/1	100		N/A	N/A	N/A	SILT_LOAM	Rock refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input checked="" type="checkbox"/> X	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)			<input type="checkbox"/> Other (Explain in Remarks)
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D4 (wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 8 (A)
2. _____				# Dominants across all strata: 8 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 6.0 x 1 = 6.0
3. _____				FACW 34.5 x 2 = 69.0
4. _____				FAC 6.0 x 3 = 18.0
5. _____				FACU 0.0 x 4 = 0.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 46.5 (A) 93.0 (B)
8. _____				Prevalence Index = B/A = 2.00
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Vaccinium corymbosum</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	21	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Juncus effusus</i>	3	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Symphotrichum puniceum</i>	3	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago rugosa</i>	3	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Osmundastrum cinnamomeum</i>	3	X	FACW	Woody vine - All woody vines, regardless of height.
6. <i>Acer rubrum</i>	3	X	FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	25	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D3 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/7/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D3 (upland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.57508 Long: -71.95048 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	7.5YR_3/2	100		N/A	N/A	N/A	PEAT	Many fine roots
2-4	10YR_3/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
4-6	10YR_4/4	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D3 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <i>Pinus strobus</i>	20.5	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>40.00%</u> (A/B)	
2. <i>Acer rubrum</i>	10.5	X	FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	31	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>3.0</u> x 2 = <u>6.0</u> FAC <u>21.0</u> x 3 = <u>63.0</u> FACU <u>78.0</u> x 4 = <u>312.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>102.0</u> (A) <u>381.0</u> (B) Prevalence Index = B/A = <u>3.74</u>	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <i>Kalmia latifolia</i>	38	X	FACU	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <i>Kalmia angustifolia</i>	10.5	X	FAC		
3. <i>Quercus rubra</i>	3		FACU		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	51	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <i>Pteridium aquilinum</i>	10.5	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Gaultheria procumbens</i>	3		FACU		
3. <i>Tsuga canadensis</i>	3		FACU		
4. <i>Rubus hispidus</i>	3		FACW		
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	19	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>	

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D3 (Wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 10/7/2020
 Applicant/Owner: National Grid Section, Township, Range: Gardner Sampling Point: D3 (Wetland plot)
 Investigator(s): Emily Martin Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.57516 Long: -71.95054 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	7.5YR_2.5/2	100		N/A	N/A	N/A	PEAT	
2-7	10YR_2/1	100	7.5YR_4/6	2	C	M	COARSE_SANDY_LOAM	Rock refusal at 7 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks:			
Other			

VEGETATION - Use scientific names of plants.



Sampling Point: D3 (Wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 22.5 x 2 = 45.0
4. _____				FAC 6.0 x 3 = 18.0
5. _____				FACU 0.0 x 4 = 0.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 28.5 (A) 63.0 (B)
8. _____				Prevalence Index = B/A = 2.21
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	3	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Frangula alnus</i>	3	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	9	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	3		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Spiraea tomentosa</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Kalmia angustifolia</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	19	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Depth for hydric soil not available



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D2 (upland plot)

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 10/7/2020
 Applicant/Owner: National Grid State: MA Sampling Point: D2 (upland plot)
 Investigator(s): Emily Martin Section, Township, Range: Gardner
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.57492 Long: -71.95023 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology - significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-2	10YR_2/1	100		N/A	N/A	FINE_SANDY_LOAM	
2-6	10YR_3/2	100		N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>No</u>	
Depth (inches): _____			
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: D2 (upland plot)

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <i>Pinus strobus</i>	10.5	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>20.00%</u> (A/B)	
2. <i>Acer rubrum</i>	3		FAC		
3. <i>Quercus rubra</i>	3		FACU		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>16</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>3.0</u> x 2 = <u>6.0</u> FAC <u>12.0</u> x 3 = <u>36.0</u> FACU <u>68.0</u> x 4 = <u>272.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>83.0</u> (A) <u>314.0</u> (B) Prevalence Index = B/A = <u>3.78</u>	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. <i>Acer rubrum</i>	3	X	FAC		
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>3</u>	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <i>Juniperus communis</i>	20.5	X	FACU	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <i>Frangula alnus</i>	3		FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>23</u>	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <i>Pteridium aquilinum</i>	20.5	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Gaultheria procumbens</i>	10.5	X	FACU		
3. <i>Rubus hispidus</i>	3		FACW		
4. <i>Cornus canadensis</i>	3		FAC		
5. <i>Dendrolycopodium obscurum</i>	3		FACU		
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	<u>40</u>	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1. _____				Hydrophytic Vegetation Present? <u>No</u>	
2. _____					
3. _____					
4. _____					
5. _____					
	<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

D2 (wetland plot)

Project Site: A1B2 City/County: Gardner / Worcester State: MA Sampling Point: D2 (wetland plot)
Applicant/Owner: National Grid
Investigator(s): Emily Martin Section, Township, Range: Gardner
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
Subregion (LRR or MLRA): LRR Lat: 42.57490 Long: -71.95027 Datum:
Soil Map Unit: Peru-Marlow association NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2) X
Shallow Aquitard (D3)
Microtopographic Relief (D4) X
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows include 0-2, 2-8, and 8-10 inch depths with soil characteristics like 10YR_3/3, 10YR_2/1, 10YR_6/1 and textures like PEAT, FINE_SANDY_LOAM.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Sandy Mucky Mineral (S1) X Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: D2 (wetland plot)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: <u>6</u> (A)
2. _____	_____	_____	_____	# Dominants across all strata: <u>8</u> (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: <u>75.00%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: <u>0.0</u> x 1 = <u>0.0</u>
2. _____	_____	_____	_____	FACW <u>44.5</u> x 2 = <u>89.0</u>
3. _____	_____	_____	_____	FAC <u>9.0</u> x 3 = <u>27.0</u>
4. _____	_____	_____	_____	FACU <u>9.0</u> x 4 = <u>36.0</u>
5. _____	_____	_____	_____	UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____	_____	_____	_____	Sum: <u>62.5</u> (A) <u>152.0</u> (B)
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.43</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Juniperus communis</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>37</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Acer rubrum</i>	3	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Kalmia angustifolia</i>	3	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	3	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Osmundastrum cinnamomeum</i>	3	X	FACW	
6. <i>Pinus strobus</i>	3	X	FACU	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>25</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-41-UPL

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 11/2/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-41-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.57273 Long: -71.94755 Datum: WGS 1984
 Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	No	Is This Sample Area Within a Wetland?	No
Hydric Soil Present?	No		
Wetland Hydrology Present?	No		
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): N/A Water Table Present? _____ Depth (inches): N/A Saturation Present? _____ Depth (inches): N/A	Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_3/1	100		N/A	N/A	N/A	LOAM	
4-8	7.5YR_3/4	100		N/A	N/A	N/A	GRAVELLY_SILT_LOAM	Auger refusal at 8in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: Boulder Depth (inches): 8	Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.	

VEGETATION - Use scientific names of plants.



Sampling Point: C-41-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>0</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>0.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				_____ Dominance Test is > 50%
1. <i>Kalmia latifolia</i>	38	X	FACU	_____ Prevalence Index is <= 3.0
2. <i>Acer rubrum</i>	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Betula populifolia</i>	3		FAC	_____ Rapid Test for Hydrophytic Vegetation
4. _____				_____ Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				Definitions of Vegetation Strata:
	<u>44</u>	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: <u>5 ft</u>)				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
1. <i>Pteridium aquilinum</i>	85.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
2. <i>Rubus flagellaris</i>	20.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. _____				Woody vine - All woody vines, regardless of height.
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>106</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-41-WET

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 11/2/2020
 Applicant/Owner: National Grid Section, Township, Range: N/A Sampling Point: C-41-WET
 Investigator(s): C. Cyrus Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR R Lat: 42.57264 Long: -71.94738 Datum: WGS 1984
 Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_3/1	100		N/A	N/A	N/A	MUCK	Auger refusal at 4in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Boulder</u>		<u>Yes</u>	
Depth (inches): <u>4</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C-41-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	20.5	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	41	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Phalaris arundinacea</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Solidago rugosa</i>	20.5		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Onoclea sensibilis</i>	20.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	104	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B59 upland plot

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B59 upland plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: 42.57234 Long: -71.94362 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? - _____ Remarks: _____
 Are Normal Circumstances present? - _____ If needed, explain any answers in Remarks: _____
 Are Vegetation - _____, Soil - _____, or Hydrology - _____ significantly disturbed? Remarks: Rip rap drainage and gravel fill
 Are Vegetation - _____, Soil - _____, or Hydrology - _____ naturally problematic? Remarks: Rip rap drainage and gravel fill
 Rip rap drainage and gravel fill

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B59 upland plot

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <u>Quercus rubra</u>	3	X	FACU	# Dominants OBL, FACW, FAC: <u>0</u> (A)
2. _____				# Dominants across all strata: <u>1</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>0.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	3	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>0.0</u> x 2 = <u>0.0</u>
3. _____				FAC <u>0.0</u> x 3 = <u>0.0</u>
4. _____				FACU <u>3.0</u> x 4 = <u>12.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>3.0</u> (A) <u>12.0</u> (B)
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index = B/A = <u>4.00</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. _____				<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	0	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B59 wet plot

Project Site: A1B2 City/County: Gardner / Worcester State: MA Samp. Date: 9/3/2020
 Applicant/Owner: National Grid Sampling Point: Wetland B59 wet plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.57229 Long: -71.94354 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Tire ruts

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u>X</u>	Depth (inches):	<u>1</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Saturation Present?	<u>X</u>	Depth (inches):	<u> </u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Saturated from ruts and rain

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_2/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 5 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?
Type: _____	<u>-</u>
Depth (inches): _____	
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B59 wet plot

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. Frangula alnus	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>7</u> (A) # Dominants across all strata: <u>8</u> (B) % Dominants OBL, FACW, FAC: <u>87.50%</u> (A/B)	
2. Acer rubrum	3		FAC		
3. Quercus rubra	3		FACU		
4.					
5.					
6.					
7.					
8.					
	16	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>4</u> x 1 = <u>4</u> FACW <u>1</u> x 2 = <u>2</u> FAC <u>4</u> x 3 = <u>12</u> FACU <u>1</u> x 4 = <u>4</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>10</u> (A) <u>22</u> (B) Prevalence Index = B/A = <u>1.96</u>	
Sapling Stratum (Plot size: <u>30 ft</u>)					
1. Frangula alnus	3	X	FAC		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
	3	= Total Cover			
Shrub Stratum (Plot size: <u>15 ft</u>)					
1. Frangula alnus	3	X	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
	3	= Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)					
1. Typha angustifolia	10.5	X	OBL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. Lythrum salicaria	10.5	X	OBL		
3. Onoclea sensibilis	10.5	X	FACW		
4. Scirpus cyperinus	10.5	X	OBL		
5. Carex X_SP	10.5	X	NULL		
6. Juncus effusus	3		OBL		
7.					
8.					
9.					
10.					
11.					
12.					
	55	= Total Cover			
Woody Vines (Plot size: <u>30 ft</u>)					
1.				Hydrophytic Vegetation Present? <u>Yes</u>	
2.					
3.					
4.					
5.					
	0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Upland B58

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 9/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: Upland B58
Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
Subregion (LRR or MLRA): LRR Lat: 42.57205 Long: -71.94255 Datum:
Soil Map Unit: Peru-Marlow NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Maintained utility row
Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? Remarks: Gravel fill
Gravel filled parking lot

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix Color (moist), %, Redox Features Color (moist), %, Type1, Loc2, Texture, Remarks. Includes profile description and data rows.

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? -

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Upland B58

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>1</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>0</u> x 2 = <u>0</u>
3. _____				FAC <u>1</u> x 3 = <u>3</u>
4. _____				FACU <u>0</u> x 4 = <u>0</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>1</u> (A) <u>3</u> (B)
7. _____				Prevalence Index = B/A = <u>3.00</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>10</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. _____				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>0</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot B58

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wet plot B58
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.57198 Long: -71.94253 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row cut and brush clearing evident
 Are Vegetation Yes, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Soil saturated from rain within 24 hours to surface			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 7 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>cobble/ston</u>		<u>Yes</u>	
Depth (inches): <u>7</u>			
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot B58

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 7 (A)
2. _____				# Dominants across all strata: 9 (B)
3. _____				% Dominants OBL, FACW, FAC: 77.78% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 1 x 1 = 1
3. _____				FACW 2 x 2 = 4
4. _____				FAC 4 x 3 = 12
5. _____				FACU 2 x 4 = 8
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 9 (A) 25 (B)
8. _____				Prevalence Index = B/A = 2.87
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Viburnum dentatum	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Betula populifolia	3	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	13	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Betula populifolia	3	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	3	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Lythrum salicaria	3	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Pteridium aquilinum	3	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Doellingeria umbellata	3	X	FACW	Woody vine - All woody vines, regardless of height.
6. Kalmia latifolia	3	X	FACU	
7. Frangula alnus	3	X	FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	21	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Westminster, Massachusetts Forms

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WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Upland B58

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Upland B58
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.57205 Long: -71.94255 Datum: _____
 Soil Map Unit: Peru-Marlow NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Remarks: Maintained utility row
 Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? Remarks: Gravel fill
Gravel filled parking lot

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: _____	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: _____	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>-</u>
Remarks: _____	

VEGETATION - Use scientific names of plants.



Sampling Point: Upland B58

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>1</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>0</u> x 2 = <u>0</u>
3. _____				FAC <u>1</u> x 3 = <u>3</u>
4. _____				FACU <u>0</u> x 4 = <u>0</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>1</u> (A) <u>3</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.00</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>10</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot B58

Project Site: A1B2 City/County: Gardner / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wet plot B58
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.57198 Long: -71.94253 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row cut and brush clearing evident
 Are Vegetation Yes, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Soil saturated from rain within 24 hours to surface			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 7 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Rock</u>		<u>Yes</u>	
Depth (inches): <u>7</u>			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot B58

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>7</u> (A)
2. _____				# Dominants across all strata: <u>9</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>77.78%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>1</u> x 1 = <u>1</u>
2. _____				FACW <u>2</u> x 2 = <u>4</u>
3. _____				FAC <u>4</u> x 3 = <u>12</u>
4. _____				FACU <u>2</u> x 4 = <u>8</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>9</u> (A) <u>25</u> (B)
7. _____				Prevalence Index = B/A = <u>2.87</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Viburnum dentatum</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Betula populifolia</i>	3	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>13</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Betula populifolia</i>	3	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	3	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Lythrum salicaria</i>	3	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Pteridium aquilinum</i>	3	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Doellingeria umbellata</i>	3	X	FACW	Woody vine - All woody vines, regardless of height.
6. <i>Kalmia latifolia</i>	3	X	FACU	
7. <i>Frangula alnus</i>	3	X	FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>21</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WE-W2

Up plot B 57

Project Site: A1B2 City/County: Westminster / Worcester State: MA Sampling Point: Up plot B 57
Applicant/Owner: National Grid
Investigator(s): Jay Quattrocchi and Emily Martin
Landform (hillslope, terrace, etc.): Other Wetland sloping through ROW south to
Subregion (LRR or MLRA): LRR Lat: 42.57028 Long: -71.93620 Datum:
Soil Map Unit: Becker-Skerry association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? -
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? -
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
Data rows: 2-0 (Leaf litter), 0-1 (5YR_2.5/2, 100, N/A, N/A, N/A, PEAT), 1-3 (5YR_2.5/1, 50, 5YR_2.5/2, 50, N/A, N/A, PEAT, Rock refusal at 3 inches)

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Up plot B 56

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 3.0 x 2 = 6.0
3. _____				FAC 3.0 x 3 = 9.0
4. _____				FACU 91.5 x 4 = 366.0
5. _____				UPL 10.5 x 5 = 52.5
6. _____				Sum: 108.0 (A) 433.5 (B)
7. _____				Prevalence Index = B/A = 4.01
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	3	X	FACW	Dominance Test is > 50%
2. <i>Quercus rubra</i>	3	X	FACU	Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	6	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Juniperus communis</i>	85.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Dennstaedtia punctilobula</i>	10.5		UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Kalmia angustifolia</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	102	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland WE-W2

B57 wetland plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: B57 wetland plot
Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Other Wetland sloping through ROW south to Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.57025 Long: -71.93622 Datum:
Soil Map Unit: Becket-Skerry association NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix Color (moist), Matrix %, Redox Features Color (moist), Redox Features %, Type, Loc, Texture, Remarks.
0-4 5YR 2.5/2 100 N/A N/A N/A PEAT
4-6 7.5YR 2.5/2 70 7.5YR 4/1 30 RM N/A LOAMY SAND Material deposited from up slope. Refusal at 6 inches

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)
Stratified Layers (A5) Depleted Matrix (F3)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: B57 wetland plot

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. <u>Acer rubrum</u>	10.5	X	FAC	# Dominants OBL, FACW, FAC: <u>5</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	10	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>4</u> x 2 = <u>8</u>
3. _____				FAC <u>3</u> x 3 = <u>9</u>
4. _____				FACU <u>5</u> x 4 = <u>20</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>12</u> (A) <u>37</u> (B)
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index = B/A = <u>2.42</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <u>Vaccinium corymbosum</u>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	38	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Thelypteris palustris</u>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <u>Rubus hispidus</u>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <u>Osmundastrum cinnamomeum</u>	10.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <u>Pteridium aquilinum</u>	3		FACU	Woody vine - All woody vines, regardless of height.
5. <u>Kalmia latifolia</u>	3		FACU	
6. <u>Viburnum dentatum</u>	3		FAC	
7. <u>Maianthemum canadense</u>	3		FACU	
8. <u>Dendrolycopodium obscurum</u>	3		FACU	
9. <u>Acer rubrum</u>	3		FAC	
10. <u>Pinus strobus</u>	3		FACU	
11. _____				
12. _____				
	62	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Up plot B54

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Up plot B54
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: 42.56672 Long: -71.91936 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Within roadway data not collected
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>-</u>	
Wetland Hydrology Present? <u>-</u>	
Remarks: <u>Plot not collected - within paved roadway</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>-</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>-</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: Up plot B54

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 0 (B)
3. _____				% Dominants OBL, FACW, FAC: _____ (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 0 x 2 = 0
4. _____				FAC 0 x 3 = 0
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 0 (A) 0 (B)
8. _____				Prevalence Index = B/A = 2.00
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> X Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. _____				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	0	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B54 wet plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B54 wet plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.56671 Long: -71.91944 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present? <u>Yes</u>	
Surface Water Present? _____	Depth (inches): <u>N/A</u>		
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_2/1	100		N/A	N/A	N/A	COARSE_SANDY_LOAM	Rock refusal at 5 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present? <u>-</u>	
Type: _____	Depth (inches): _____		
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: B54 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 2 x 1 = 2
2. _____				FACW 4 x 2 = 8
3. _____				FAC 5 x 3 = 15
4. _____				FACU 1 x 4 = 4
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 12 (A) 29 (B)
7. _____				Prevalence Index = B/A = 2.00
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Acer rubrum</i>	3	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Viburnum dentatum</i>	3	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Sambucus nigra</i>	3	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	9	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	20.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmunda spectabilis</i>	10.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Lythrum salicaria</i>	10.5		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago rugosa</i>	3		FAC	Woody vine - All woody vines, regardless of height.
6. <i>Euthamia graminifolia</i>	3		FAC	
7. <i>Viburnum dentatum</i>	3		FAC	
8. <i>Spiraea alba</i>	3		FACW	
9. <i>Rubus idaeus</i>	3		FACU	
10. _____				
11. _____				
12. _____				
	119	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B52 upland

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 11/5/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B52 upland
 Investigator(s): Jay Quattrocchi Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): _____ Lat: 42.56540 Long: -71.91406 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
2	10YR_2/2	100		N/A	N/A	N/A	PEAT	Peat/organic
2-6	10YR_3/4	100		N/A	N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Cobble</u> Depth (inches): <u>6</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: B52 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 0.0 x 2 = 0.0
3. _____				FAC 20.5 x 3 = 61.5
4. _____				FACU 106.0 x 4 = 424.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 126.5 (A) 485.5 (B)
7. _____				Prevalence Index = B/A = 3.84
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	85.5	X	FACU	Dominance Test is > 50%
2. _____				Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	85	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pteridium aquilinum</i>	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pyrola americana</i>	20.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	41	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot 52

Project Site: A1B2 City/County: Westminster / Worcester State: MA Sampling Point: Wet plot 52
Applicant/Owner: National Grid
Investigator(s): Jay Quattrocchi and Emily Martin
Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Flat Slope (%): <1%
Subregion (LRR or MLRA): LRR Lat: 42.56537 Long: -71.91421 Datum:
Soil Map Unit: Peru-Marlow association NWI Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): Surface
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-12+ 10YR_2/1 100 N/A N/A N/A MUCKY_PEAT Sulfur odor
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
X Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot 52

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. <i>Acer rubrum</i>	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 3 (A) # Dominants across all strata: 4 (B) % Dominants OBL, FACW, FAC: 75.00% (A/B)	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
	10	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL 2 x 1 = 2 FACW 0 x 2 = 0 FAC 1 x 3 = 3 FACU 1 x 4 = 4 UPL 0 x 5 = 0 Sum: 4 (A) 9 (B) Prevalence Index = B/A = 1.26	
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. <i>Kalmia latifolia</i>	3	X	FACU	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
	3	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. <i>Sparganium americanum</i>	63	X	OBL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Typha angustifolia</i>	38	X	OBL		
3. <i>Carex X_SP</i>	10.5		NULL		
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
	111	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
	0	= Total Cover		Hydrophytic Vegetation Present? Yes	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot B51 and C18

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wet plot B51 and C18
Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Hummocky Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.56483 Long: -71.91124 Datum:
Soil Map Unit: Peru-Marlow association NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? -
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
0-5 10YR_2/1 100 N/A N/A N/A SANDY_LOAM Rock refusal at 5 inches

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)
Stratified Layers (A5) Depleted Matrix (F3)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6)
Thick Dark Surface (A12) Depleted Dark Surface (F7)
Sandy Mucky Mineral (S1) Redox Depressions (F8)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? -
Remarks:
Other

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot B51 and C18

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>4</u> x 2 = <u>8</u>
3. _____				FAC <u>4</u> x 3 = <u>12</u>
4. _____				FACU <u>2</u> x 4 = <u>8</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>10</u> (A) <u>28</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.37</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Viburnum dentatum</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Kalmia latifolia</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>27</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Doellingeria umbellata</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago rugosa</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Eutrochium_SP</i>	10.5		NULL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Toxicodendron radicans</i>	3		FAC	
6. <i>Thelypteris palustris</i>	3		FACW	
7. <i>Kalmia latifolia</i>	3		FACU	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>88</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Required depth not achieved.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-19-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-19-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.564386 Long: -71.913171 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Transmission ROW; compaction and fill material from
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: existing road.

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_4/3	100		N/A	N/A	N/A	GRAVELLY_LOAM	Auger refusal at 2in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>		<u>No</u>	
Depth (inches): <u>2</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: C-19-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>0</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>0.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				_____ Dominance Test is > 50%
1. <i>Kalmia latifolia</i>	10.5	X	FACU	_____ Prevalence Index is <= 3.0
2. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				_____ Rapid Test for Hydrophytic Vegetation
4. _____				_____ Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>10</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Schedonorus arundinaceus</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>20</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-19-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-19-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.564511 Long: -71.913581 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_4/2	97	10YR_4/6	3	C	M	LOAM	Auger refusal at 5in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>Yes</u>	
Depth (inches): <u>5</u>			
Remarks: Depleted matrix (F3) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: C-19-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. <i>Betula populifolia</i>	10.5	X	FAC	Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	<u>10</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Kalmia latifolia</i>	38	X	FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>38</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Glyceria striata</i>	10.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>10</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C17 upland

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C17 upland
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.56363 Long: -71.91456 Datum: _____
 Soil Map Unit: Peru-Marlo's association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>-</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	5YR_2.5/2	100		N/A	N/A	N/A	PEAT	
2-8	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
8-12	10YR_2/1	70	10YR_4/1	30	N/A	N/A	FINE_SANDY_LOAM	Sand included as redox.

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?	<u>No</u>
Type: _____		
Depth (inches): _____		
Remarks: _____		

VEGETATION - Use scientific names of plants.



Sampling Point: C17 upland

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.					Dominance Test Worksheet:	
2.					# Dominants OBL, FACW, FAC: 0 (A)	
3.					# Dominants across all strata: 4 (B)	
4.					% Dominants OBL, FACW, FAC: 0.00% (A/B)	
5.						
6.						
7.						
8.						
		0	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)					Total % Cover of: Multiply By:	
1.					OBL 0.0	x 1 = 0.0
2.					FACW 13.5	x 2 = 27.0
3.					FAC 21.0	x 3 = 63.0
4.					FACU 75.0	x 4 = 300.0
5.					UPL 0.0	x 5 = 0.0
6.					Sum: 109.5 (A)	390.0 (B)
7.					Prevalence Index = B/A = 3.56	
8.						
		0	= Total Cover		Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)					Dominance Test is > 50%	
1. Kalmia latifolia		20.5	X	FACU	Prevalence Index is <= 3.0	
2. Hamamelis virginiana		10.5	X	FACU	Problematic Hydrophytic Vegetation ¹ (explain)	
3. Vaccinium corymbosum		3		FACW	Rapid Test for Hydrophytic Vegetation	
4.					Morphological Adaptations	
5.					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
6.						
7.						
8.						
		34	= Total Cover		Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)					Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
1. Juniperus communis		20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
2. Kalmia latifolia		20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
3. Rubus hispidus		10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
4. Pyrola americana		10.5		FAC	Woody vine - All woody vines, regardless of height.	
5. Cornus canadensis		10.5		FAC		
6. Pteridium aquilinum		3		FACU		
7.						
8.						
9.						
10.						
11.						
12.						
		75	= Total Cover		Hydrophytic Vegetation Present? No	
Woody Vines (Plot size: 30 ft)						
1.						
2.						
3.						
4.						
5.						
		0	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C17 wet plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C17 wet plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.56358 Long: -71.91474 Datum: _____
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	<u> </u> Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	<u> </u> Depth (inches): <u>N/A</u>		
Saturation Present?	<u>X</u> <u> </u> Depth (inches): <u>3</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	7.5YR_2.5/1	100		N/A	N/A	N/A	PEAT	
2-14	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Refusal at 14 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: C17 wet plot

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>5</u> (A)
2. _____				# Dominants across all strata: <u>6</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>83.33%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>21.0</u> x 1 = <u>21.0</u>
2. _____				FACW <u>44.0</u> x 2 = <u>88.0</u>
3. _____				FAC <u>16.5</u> x 3 = <u>49.5</u>
4. _____				FACU <u>10.5</u> x 4 = <u>42.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>92.0</u> (A) <u>200.5</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.18</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <u>Lyonia ligustrina</u>	<u>20.5</u>	<u>X</u>	<u>FACW</u>	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <u>Kalmia latifolia</u>	<u>10.5</u>	<u>X</u>	<u>FACU</u>	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>31</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <u>Rubus hispidus</u>	<u>20.5</u>	<u>X</u>	<u>FACW</u>	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <u>Carex hystericina</u>	<u>10.5</u>	<u>X</u>	<u>OBL</u>	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <u>Juncus effusus</u>	<u>10.5</u>	<u>X</u>	<u>OBL</u>	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <u>Solidago rugosa</u>	<u>10.5</u>	<u>X</u>	<u>FAC</u>	Woody vine - All woody vines, regardless of height.
5. <u>Acer rubrum</u>	<u>3</u>		<u>FAC</u>	
6. <u>Carex_SP</u>	<u>3</u>		<u>NULL</u>	
7. <u>Dichanthelium clandestinum</u>	<u>3</u>		<u>FACW</u>	
8. <u>Viburnum dentatum</u>	<u>3</u>		<u>FAC</u>	
9. _____				
10. _____				
11. _____				
12. _____				
	<u>64</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-16-UPL

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 11/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-16-UPL
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.55992 Long: -71.91966 Datum: WGS 1984
Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_4/3 100 N/A N/A N/A N/A LOAM Auger refusal at 6 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock Hydric Soil Present? No
Depth (inches): 6
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-16-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	_____ Dominance Test is > 50%
2. <i>Corylus cornuta</i>	20.5	X	FACU	_____ Prevalence Index is <= 3.0
3. <i>Rubus pensilvanicus</i>	20.5	X	FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	61	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Parathelypteris noveboracensis</i>	63	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Mitchella repens</i>	10.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Rubus flagellaris</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	76	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-16-WET

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 11/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-16-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.55981 Long: -71.91957 Datum: WGS 1984
 Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/1	100		N/A	N/A	N/A	MUCKY_LOAM	Auger refusal at 8in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input checked="" type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>8</u>	Hydric Soil Present? <u>Yes</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: C-16-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <i>Lyonia mariana</i>	38	X	FAC	
2. <i>Spiraea alba</i>	3		FACW	
3. <i>Kalmia angustifolia</i>	3		FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>44</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Hydrocotyle verticillata</i>	10.5	X	OBL	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>10</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C15 upland plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 6/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C15 upland plot
 Investigator(s): Tim Sullivan and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.55382 Long: -71.92258 Datum: GCS WGS 1984
 Soil Map Unit: Peru-Marlow association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	7.5YR_4/4	100		N/A	N/A	N/A	SAND	15-20% gravel
10-12		100		N/A	N/A	N/A	SAND	Refusal at 12

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C15 upland plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 0 x 2 = 0
3. _____				FAC 0 x 3 = 0
4. _____				FACU 1 x 4 = 4
5. _____				UPL 1 x 5 = 5
6. _____				Sum: 2 (A) 9 (B)
7. _____				Prevalence Index = B/A = 4.07
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Lonicera morrowii	38	X	FACU	Dominance Test is > 50%
2. _____				Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	38	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Solidago X_SP	10.5	X	NULL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Dennstaedtia punctilobula	3	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	13	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C15 wet plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 6/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C15 wet plot
 Investigator(s): TS and EM Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Hummocky Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.55375 Long: -71.92260 Datum: GCS WGS 1984
 Soil Map Unit: Peru-Marlow association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>6</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR_2/2	100		N/A	N/A	N/A	LOAMY_SAND	Mucky. Refusal at 8
8-12	10YR_4/2	100		N/A	N/A	N/A	SAND	Refusal at 12

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C15 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 4 x 2 = 8
4. _____				FAC 2 x 3 = 6
5. _____				FACU 1 x 4 = 4
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 7 (A) 18 (B)
8. _____				Prevalence Index = B/A = 2.87
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Alnus incana	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Lonicera morrowii	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Viburnum dentatum	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. Acer rubrum	3		FAC	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	30	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Onoclea sensibilis	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Osmundastrum cinnamomeum	3		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	41	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C14A upland plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 6/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C14A upland plot
 Investigator(s): Tim Sullivan and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.55276 Long: -71.92356 Datum: GCS WGS 1984
 Soil Map Unit: Peru Marlow association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil Yes, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Maintained utility row

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_3/3	100		N/A	N/A	N/A	SAND	50% roots and leaf matter
2-10	2.5Y_5/6	100		N/A	N/A	N/A	SAND	5 YR 4/6 mottles 5%. Refusal at 10

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: _____		Hydric Soil Present?	<u>No</u>
Depth (inches): _____			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C14A upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>6</u> (B) % Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0</u> x 1 = <u>0</u> FACW <u>2</u> x 2 = <u>4</u> FAC <u>1</u> x 3 = <u>3</u> FACU <u>2</u> x 4 = <u>8</u> UPL <u>1</u> x 5 = <u>5</u> Sum: <u>6</u> (A) <u>20</u> (B) Prevalence Index = B/A = <u>3.55</u>	
Sapling Stratum (Plot size: 30 ft) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____					
	<u>0</u>	= Total Cover			
Shrub Stratum (Plot size: 15 ft) 1. Hamamelis virginiana 20.5 X FACU 2. Viburnum dentatum 10.5 X FAC 3. Salix_SP 10.5 X NULL 4. Lyonia ligustrina 3 FACW 5. _____ 6. _____ 7. _____ 8. _____					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
	<u>44</u>	= Total Cover			
Herb Stratum (Plot size: 5 ft) 1. Maianthemum canadense 3 X FACU 2. Onoclea sensibilis 3 X FACW 3. Dennstaedtia punctilobula 3 X UPL 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
	<u>9</u>	= Total Cover			
Woody Vines (Plot size: 30 ft) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____					Hydrophytic Vegetation Present? <u>No</u>
	<u>0</u>	= Total Cover			

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C14 wet plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 6/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland C14 wet plot
 Investigator(s): Tim Sullivan and Emily Martin Section, Township, Range: WESTMINSTER
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.55267 Long: -71.92359 Datum: GCS WGS 1984
 Soil Map Unit: Peru-Marlow association NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			
Surface Water Present?	<u>X</u>	Depth (inches):	<u>1</u>
Water Table Present?	<u>X</u>	Depth (inches):	<u>1</u>
Saturation Present?	<u>X</u>	Depth (inches):	<u>Surface</u>
Wetland Hydrology Present?			<u>Yes</u>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR_2/2	100		N/A	N/A	N/A	MUCK	Some organic. Refusal at 12 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>Yes</u>
Type:			
Depth (inches):			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C14 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Acer rubrum	3	X	FAC	Total % Cover of: Multiply By: OBL 1 x 1 = 1 FACW 4 x 2 = 8 FAC 2 x 3 = 6 FACU 0 x 4 = 0 UPL 0 x 5 = 0 Sum: 7 (A) 15 (B) Prevalence Index = B/A = 2.88
2. Frangula alnus	3	X	FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	6	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Vaccinium corymbosum	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Lyonia ligustrina	10.5	X	FACW	
3. Rhododendron viscosum	3		FACW	
4. Spiraea tomentosa	3		FACW	
5. _____				
6. _____				
7. _____				
8. _____				
	27	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Typha latifolia	3	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	3	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B50 upland

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B50 upland
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.56459 Long: -71.91003 Datum: _____
 Soil Map Unit: Tunbridge-Lyman-Berkshire association NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: _____	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: _____	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_2/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 4 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: _____	

VEGETATION - Use scientific names of plants.



Sampling Point: B50 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 60.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 2 x 2 = 4
4. _____				FAC 1 x 3 = 3
5. _____				FACU 1 x 4 = 4
6. _____				UPL 1 x 5 = 5
7. _____				Sum: 5 (A) 16 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 2.83
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	3	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Pteridium aquilinum</i>	10.5	X	FACU	
3. <i>Dennstaedtia punctilobula</i>	10.5	X	UPL	
4. <i>Pyrola americana</i>	10.5	X	FAC	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	52	= Total Cover		Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
1. _____				Woody vine - All woody vines, regardless of height.
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B50 wet plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: B50 wet plot
Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
Subregion (LRR or MLRA): LRR Lat: 42.56456 Long: -71.90994 Datum:
Soil Map Unit: Tunbidge-Lyman-Berkshire association NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type¹ Loc² Texture Remarks
0-8 5YR_2.5/2 100 N/A N/A N/A PEAT Organic layer -sandy loam/peat
8-11 7.5YR_3/3 50 7.5YR_2.5/2 50 N/A N/A FINE_SANDY_LOAM Rock refusal at 11 inches
¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.
²Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils³:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: B50 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 3 x 2 = 6
4. _____				FAC 3 x 3 = 9
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 6 (A) 15 (B)
8. _____				Prevalence Index = B/A = 2.41
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Acer rubrum	3	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	3	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Spiraea tomentosa	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Acer rubrum	10.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Carex X_SP	3		NULL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Solidago rugosa	3		FAC	Woody vine - All woody vines, regardless of height.
6. Osmundastrum cinnamomeum	3		FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	40	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Upland plot B49

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Upland plot B49
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.56253 Long: -71.90573 Datum: _____
 Soil Map Unit: Pilsbury-Peacham association NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? - Remarks: _____
 Are Normal Circumstances present? - If needed, explain any answers in Remarks: _____
 Are Vegetation -, Soil -, or Hydrology - significantly disturbed? Remarks: Maintained utility row
 Are Vegetation -, Soil -, or Hydrology - naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? <u>_____</u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? <u>_____</u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u>_____</u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-6	10YR_2/2	100		N/A	N/A	FINE SANDY LOAM	
6-15	10YR_4/6	75	10YR_4/4	10	C	FINE SANDY LOAM	Refusal at 15 inches
			10YR_5/6	15	C		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: Upland plot B49

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 75.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0.0 x 1 = 0.0
2. _____				FACW 6.0 x 2 = 12.0
3. _____				FAC 19.5 x 3 = 58.5
4. _____				FACU 10.5 x 4 = 42.0
5. _____				UPL 0.0 x 5 = 0.0
6. _____				Sum: 36.0 (A) 112.5 (B)
7. _____				Prevalence Index = B/A = 3.13
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	3	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Acer rubrum	3	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	6	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Betula populifolia	10.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Pteridium aquilinum	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Onoclea sensibilis	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Spiraea alba	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Solidago rugosa	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	30	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot B49

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wet plot B49
Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
Subregion (LRR or MLRA): LRR Lat: 42.56262 Long: -71.90586 Datum:
Soil Map Unit: Pilsbury-peacham association NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) X Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 4
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-10 10YR_2/1 100 N/A N/A N/A SANDY_CLAY_LOAM Refusal at 10 inches
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot B49

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 4 x 2 = 8
4. _____				FAC 4 x 3 = 12
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 8 (A) 20 (B)
8. _____				Prevalence Index = B/A = 2.59
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Viburnum dentatum	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Acer rubrum	3	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Osmundastrum cinnamomeum	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Onoclea sensibilis	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Doellingeria umbellata	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Betula populifolia	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Acer rubrum	3		FAC	Woody vine - All woody vines, regardless of height.
6. Spiraea alba	3		FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	0	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Up plot B48

Project Site: A1B2 City/County: Westminster / Worcester State: MA Sampling Point: Up plot B48
Applicant/Owner: National Grid
Investigator(s): Jay Quattrocchi and Emily Martin
Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Flat Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.56222 Long: -71.90517 Datum:
Soil Map Unit: Pilsbury-Peacham association NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-4 10YR_3/4 100 N/A N/A N/A LOAMY_SAND Cobble refusal at 4 inches
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Up plot B48

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 0 x 2 = 0
4. _____				FAC 5 x 3 = 15
5. _____				FACU 4 x 4 = 16
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 9 (A) 31 (B)
8. _____				Prevalence Index = B/A = 3.13
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Betula populifolia</i>	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Acer rubrum</i>	3		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Populus grandidentata</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Frangula alnus</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	29	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Solidago rugosa</i>	20.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Oxalis stricta</i>	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Betula populifolia</i>	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Populus grandidentata</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Senecio hieraciifolius</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	40	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B 48 wet plot

Project Site: A1B2 City/County: Westminster / Worcester State: MA Sampling Point: B 48 wet plot
Applicant/Owner: National Grid
Investigator(s): Jay Quattrocchi and Emily Martin
Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Flat Slope (%): <1%
Subregion (LRR or MLRA): LRR Lat: 42.56229 Long: -71.90520 Datum:
Soil Map Unit: Pilsbury-Peacham association NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Heavily disturbed. Recently clear utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-9 10YR_2/2 100 N/A N/A N/A FINE_SANDY_LOAM O layer moderately decomposed
9-13 10YR_2/2 80 10YR_3/3 20 C M FINE_SANDY_LOAM 9-13
13-15 10YR_3/3 80 10YR_3/2 20 C M FINE_SANDY_LOAM Refusal at 15 inches
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: B 48 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: 4 (A)
2. _____	_____	_____	_____	# Dominants across all strata: 4 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____	_____	_____	_____	Total % Cover of: OBL 0 x 1 = 0
2. _____	_____	_____	_____	FACW 3 x 2 = 6
3. _____	_____	_____	_____	FAC 1 x 3 = 3
4. _____	_____	_____	_____	FACU 0 x 4 = 0
5. _____	_____	_____	_____	UPL 0 x 5 = 0
6. _____	_____	_____	_____	Sum: 4 (A) 9 (B)
7. _____	_____	_____	_____	Prevalence Index = B/A = 2.25
8. _____	_____	_____	_____	
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium corymbosum</i>	3	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Acer rubrum</i>	3	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____	_____	_____	_____	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	9	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Spiraea alba</i>	3	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____	_____	_____	_____	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____	_____	_____	_____	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____	_____	_____	_____	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____	_____	_____	_____	Woody vine - All woody vines, regardless of height.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	3	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Other



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B46 upland plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: B46 upland plot
Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.56145 Long: -71.90363 Datum:
Soil Map Unit: Marrow fine sandy loam NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-1 7.5YR_3/3 100 N/A N/A N/A N/A LOAMY_SAND
1-7 10YR_3/6 100 N/A N/A N/A FINE_SANDY_LOAM
7-12 10YR_5/6 70 10YR_4/6 30 C M FINE_SANDY_LOAM Refusal at 12 inches
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: B46 upland plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>2</u> x 2 = <u>4</u>
3. _____				FAC <u>3</u> x 3 = <u>9</u>
4. _____				FACU <u>4</u> x 4 = <u>16</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>9</u> (A) <u>29</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.77</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>3</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus hispidus</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Rubus allegheniensis</i>	10.5	X	FACU	
3. <i>Solidago canadensis</i>	3		FACU	
4. <i>Solidago rugosa</i>	3		FAC	
5. <i>Dichanthelium acuminatum</i>	3		FAC	
6. <i>Frangula alnus</i>	3		FAC	
7. <i>Maianthemum canadense</i>	3		FACU	
8. <i>Aralia nudicaulis</i>	3		FACU	
9. _____				
10. _____				
11. _____				
12. _____				
	<u>39</u>	= Total Cover		Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
1. _____				Woody vine - All woody vines, regardless of height.
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot B46

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wet plot B46
Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.56142 Long: -71.90352 Datum:
Soil Map Unit: Marrow fine sandy loam NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil -, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
0-5 7.5YR_3/2 100 N/A N/A N/A FINE_SANDY_LOAM Rock refusal at 5 inches

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No

Remarks:
Other

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot B46

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>7</u> (A)
2. _____				# Dominants across all strata: <u>8</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>87.50%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>55.5</u> x 2 = <u>111.0</u>
3. _____				FAC <u>27.0</u> x 3 = <u>81.0</u>
4. _____				FACU <u>16.5</u> x 4 = <u>66.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>99.0</u> (A) <u>258.0</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.61</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Vaccinium corymbosum</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Frangula alnus</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Ilex verticillata</i>	10.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Viburnum dentatum</i>	10.5	X	FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>42</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Thelypteris palustris</i>	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Onoclea sensibilis</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Euthamia graminifolia</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago rugosa</i>	3		FAC	
6. <i>Spiraea alba</i>	3		FACW	
7. <i>Aralia nudicaulis</i>	3		FACU	
8. <i>Quercus rubra</i>	3		FACU	
9. _____				
10. _____				
11. _____				
12. _____				
	<u>46</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. <i>Vitis labrusca</i>	10.5		FACU	
2. _____				
3. _____				
4. _____				
5. _____				
	<u>10</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Not deep enough to meet indicator.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Upland B47

Project Site: A1B2 City/County: Westminster / Worcester State: MA Sampling Point: Upland B47
Applicant/Owner: National Grid
Investigator(s): Jay Quattrocchi and Emily Martin
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix Color (moist), Matrix %, Redox Features Color (moist), Redox Features %, Type1, Loc2, Texture, Remarks. Row 1: 0-13, 7.5YR_3/3, 100, N/A, N/A, N/A, FINE_SANDY_LOAM, Refusal at 13 inches

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Sandy Mucky Mineral (S1) Loamy Mucky Mineral (F1) (LRR K, L)
Sandy Gleyed Matrix (S4) Loamy Gleyed Matrix (F2)
Sandy Redox (S5) Depleted Matrix (F3)
Stripped Matrix (S6) Redox Dark Surface (F6)
Dark Surface (S7) (LRR R, MLRA 149B) Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 1 x 2 = 2
4. _____				FAC 1 x 3 = 3
5. _____				FACU 3 x 4 = 12
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 5 (A) 17 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 3.02
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				Dominance Test is > 50%
2. _____				Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Solidago canadensis	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Oxalis stricta	20.5	X	FACU	
3. Solidago rugosa	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Parthenocissus quinquefolia	10.5		FACU	
5. Persicaria lapathifolia	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
6. _____				
7. _____				Woody vine - All woody vines, regardless of height.
8. _____				
9. _____				Hydrophytic Vegetation Present? No
10. _____				
11. _____				
12. _____				
	65	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (If observed, list morphological adaptations below).
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B47 wet plot

Project Site: A1B2 City/County: Westminster / Worcester Samp. Date: 9/1/2020
Applicant/Owner: National Grid State: MA Sampling Point: B47 wet plot
Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.56022 Long: -71.90098 Datum:
Soil Map Unit: Peru-Marlow association NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-6 10YR_2/2 100 10YR_3/6 50 N/A N/A FINE_SANDY_LOAM O layer. Some clay
6-14 10YR_2/2 50 10YR_3/6 50 N/A N/A FINE_SANDY_LOAM Refusal at 14
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: B47 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 6 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 8 x 2 = 16
3. _____				FAC 2 x 3 = 6
4. _____				FACU 1 x 4 = 4
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 11 (A) 26 (B)
7. _____				Prevalence Index = B/A = 2.37
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium corymbosum</i>	3	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	6	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Doellingeria umbellata</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Solidago rugosa</i>	10.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Thelypteris palustris</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Euthamia graminifolia</i>	10.5	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Impatiens capensis</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Parthenocissus quinquefolia</i>	3		FACU	
7. <i>Spiraea alba</i>	3		FACW	
8. <i>Dichanthelium clandestinum</i>	3		FACW	
9. <i>Osmundastrum cinnamomeum</i>	3		FACW	
10. _____				
11. _____				
12. _____				
	67	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B45 (upland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/26/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B45 (upland plot)
Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.55825 Long: -71.89719 Datum: NAD 83
Soil Map Unit: Pillsbury-Peacham associaion, 0 to 8 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? Yes
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix Color (moist), Matrix %, Redox Features Color (moist), Redox Features %, Type1, Loc2, Texture, Remarks. Row 1: 0-6, 10YR_2/1, 100, N/A, N/A, N/A, FINE_SANDY_LOAM, Organics mixed in.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) X Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B45 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>20.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>4</u> x 4 = <u>16</u>
5. _____				UPL <u>1</u> x 5 = <u>5</u>
6. _____				Sum: <u>6</u> (A) <u>23</u> (B)
7. _____				Prevalence Index = B/A = <u>2.79</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	85.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium simulatum</i>	10.5		UPL	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>96</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Parthenocissus quinquefolia</i>	3	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	3	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	3	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Quercus rubra</i>	3	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>12</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B45 (wetland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester State: MA Sampling Point: Wetland B45 (wetland plot)
Applicant/Owner: National Grid
Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.55822 Long: -71.89715 Datum: NAD 83
Soil Map Unit: Pillsbury-Peacham associaion, 0 to 8 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): 5
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
0-15 10YR_2/1 100 N/A N/A N/A FINE_SANDY_LOAM Organic. Mucky.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) X Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:
Other

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B45 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>80.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>1</u> x 1 = <u>1</u>
2. _____				FACW <u>6</u> x 2 = <u>12</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>2</u> x 4 = <u>8</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>9</u> (A) <u>21</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.75</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium corymbosum</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Kalmia latifolia</i>	10.5	X	FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>44</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Scirpus cyperinus</i>	10.5	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus hispidus</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Spiraea alba</i>	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Solidago canadensis</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Onoclea sensibilis</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>30</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks:
1. _____				(If observed, list morphological adaptations below).
2. _____				Other
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrogen sulfide odor.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B44 (upland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/26/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B44 (upland plot)
Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.55639 Long: -71.89356 Datum: NAD 83
Soil Map Unit: Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 5YR_3/3 100 N/A N/A N/A N/A PEAT
4-12 10YR_3/6 100 N/A N/A N/A N/A FINE_SANDY_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type: Rock Hydric Soil Present? No
Depth (inches): 12
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B44 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Quercus rubra	3	X	FACU	Total % Cover of: OBL <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>2</u> x 2 = <u>4</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>4</u> x 4 = <u>16</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>8</u> (A) <u>26</u> (B)
7. _____				Prevalence Index = B/A = <u>2.82</u>
8. _____				
	<u>3</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Kalmia latifolia	20.5	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. Spiraea alba	3		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>23</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Brachyelytrum erectum	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Solidago rugosa	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Solidago canadensis	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Acer rubrum	3		FAC	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>117</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B44 (wetland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester State: MA Sampling Point: Wetland B44 (wetland plot)
Applicant/Owner: National Grid
Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.55643 Long: -71.89366 Datum: NAD 83
Soil Map Unit: Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) X Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) X Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Other

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
0-4: 5YR_3/2, 100, N/A, N/A, N/A, PEAT, Sphagnum moss.
4-11: 10YR_2/2, 100, N/A, N/A, N/A, FINE_SANDY_LOAM
11-17: 10YR_3/2, 100, N/A, N/A, N/A, FINE_SANDY_LOAM

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) X Depleted Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B44 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 8 (A)
2. _____				# Dominants across all strata: 12 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. <i>Betula populifolia</i>	3	X	FAC	Total % Cover of: OBL 1 x 1 = 1
2. <i>Quercus rubra</i>	3	X	FACU	FACW 4 x 2 = 8
3. <i>Acer rubrum</i>	3	X	FAC	FAC 3 x 3 = 9
4. _____				FACU 4 x 4 = 16
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 12 (A) 34 (B)
7. _____				Prevalence Index = B/A = 2.83
8. _____				
	9	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Hamamelis virginiana</i>	20.5	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Kalmia latifolia</i>	10.5	X	FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	31	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Toxicodendron radicans</i>	20.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Solidago canadensis</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Glyceria striata</i>	10.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Onoclea sensibilis</i>	10.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Spiraea alba</i>	10.5	X	FACW	Woody vine - All woody vines, regardless of height.
6. <i>Rubus hispidus</i>	10.5	X	FACW	
7. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	
8. <i>Andropogon_SP</i>	3		NULL	
9. _____				
10. _____				
11. _____				
12. _____				
	96	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Other



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B38 (upland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B38 (upland plot)
Investigator(s): Nicole Martin and Chris Wagner Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.55493 Long: -71.89025 Datum: NAD 83
Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR_2/1 100 N/A N/A N/A N/A LOAM A horizon
2-7 7.5YR_4/6 100 N/A N/A N/A N/A LOAM B1 horizon
7-14+ 10YR_5/4 100 N/A N/A N/A N/A LOAM B2 horizon
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B38 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>4</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>25.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>5</u> x 4 = <u>20</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>6</u> (A) <u>22</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.69</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	38	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Juniperus communis</i>	38	X	FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Hamamelis virginiana</i>	10.5		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Quercus rubra</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>89</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Vaccinium angustifolium</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>41</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks:
1. _____				(If observed, list morphological adaptations below). No hydrophytic vegetation indicators present; parameter is not met.
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B38 (wetland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B38 (wetland plot)
Investigator(s): Nicole Martin and Chris Wagner Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.55484 Long: -71.89021 Datum: NAD 83
Soil Map Unit: Peru-Marlow association, 3 to 15 percent slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) X Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Color (moist), %, Type, Loc, Texture, Remarks. Rows show data for depths 0-3, 3-7, and 7-5+ inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
X Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) X Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B38 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 4 x 2 = 8
3. _____				FAC 2 x 3 = 6
4. _____				FACU 2 x 4 = 8
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 8 (A) 22 (B)
7. _____				Prevalence Index = B/A = 2.22
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Rubus allegheniensis</i>	10.5		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Kalmia latifolia</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	54	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmunda claytoniana</i>	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago rugosa</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Doellingeria umbellata</i>	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	122	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B39 (upland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B39 (upland plot)
Investigator(s): Nicole Martin and Chris Wagner Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 3-5%
Subregion (LRR or MLRA): LRR Lat: 42.55418 Long: -71.88897 Datum: NAD 83
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percents slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows for 0-2, 2-7, and 7-15+ inch depths.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B39 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>4</u> x 3 = <u>12</u>
4. _____				FACU <u>3</u> x 4 = <u>12</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>8</u> (A) <u>26</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.49</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Rosa multiflora</i>	38	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Rubus allegheniensis</i>	10.5		FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Vitis labrusca</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Viburnum dentatum</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	<u>54</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Impatiens capensis</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Solidago rugosa</i>	10.5		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Euthamia graminifolia</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Rumex crispus</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>62</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (if observed, list morphological adaptations below).
1. _____				_____ _____ _____ _____ _____ _____
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B39 (wetland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B39 (wetland plot)
Investigator(s): Nicole Martin and Chris Wagner Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.55412 Long: -71.88885 Datum: NAD 83
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percents slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5) Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks.
0-8: 10YR_2/2, 97, 10YR_3/4, 3, C, M, FINE_SANDY_LOAM, A horizon
8-10: 2.5Y_6/2, 95, 2.5Y_5/6, 5, C, M, LOAMY_SAND
10+: 100, N/A, N/A, N/A, Refusal.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B39 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 2 x 1 = 2
2. _____				FACW 7 x 2 = 14
3. _____				FAC 0 x 3 = 0
4. _____				FACU 2 x 4 = 8
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 11 (A) 24 (B)
7. _____				Prevalence Index = B/A = 2.11
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Rosa multiflora</i>	10.5		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Vitis labrusca</i>	10.5		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Cornus amomum</i>	3		FACW	<input type="checkbox"/> Morphological Adaptations
6. <i>Sambucus nigra</i>	3		FACW	
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____				
	68	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Impatiens capensis</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Epilobium leptophyllum</i>	10.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Osmundastrum cinnamomeum</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Persicaria arifolia</i>	3		OBL	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	90	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B40 (upland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B40 (upland plot)
Investigator(s): Nicole Martin and Chris Wagner Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.55369 Long: -71.88792 Datum: NAD 83
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percents slopes, extremely stony NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:
No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Color (moist), %, Type, Loc, Texture, Remarks. Rows for 0-3 and 3-15+ depth intervals.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B40 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 83.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 3 x 2 = 6
4. _____				FAC 2 x 3 = 6
5. _____				FACU 2 x 4 = 8
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 7 (A) 20 (B)
8. _____				Prevalence Index = B/A = 2.39
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	38	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Ilex verticillata</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Lyonia ligustrina</i>	20.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Kalmia angustifolia</i>	20.5	X	FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	99	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmunda claytoniana</i>	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	20.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	121	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B40 (wetland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B40 (wetland plot)
Investigator(s): Nicole Martin and Chris Wagner Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1-2%
Subregion (LRR or MLRA): LRR Lat: 42.55366 Long: -71.88782 Datum: NAD 83
Soil Map Unit: Pillsbury-Peacham association, 0 to 8 percents slopes, extremely stony NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) X Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix, Color (moist), %, Redox Features, Color (moist), %, Type1, Loc2, Texture, Remarks

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
X Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B40 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 3 x 1 = 3
2. _____				FACW 6 x 2 = 12
3. _____				FAC 2 x 3 = 6
4. _____				FACU 0 x 4 = 0
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 11 (A) 21 (B)
7. _____				Prevalence Index = B/A = 2.04
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Ilex verticillata</i>	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Sambucus nigra</i>	10.5		FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Viburnum dentatum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	79	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	38	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Solidago rugosa</i>	20.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Persicaria sagittata</i>	10.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Impatiens capensis</i>	10.5		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Onoclea sensibilis</i>	10.5		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Epilobium leptophyllum</i>	3		OBL	
7. <i>Typha latifolia</i>	3		OBL	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	96	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B37 (upland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B37 (upland plot)
Investigator(s): Nicole Martin and Chris Wagner Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 8-12%
Subregion (LRR or MLRA): LRR Lat: 42.54851 Long: -71.87681 Datum: NAD 83
Soil Map Unit: Allagash fine sandy loam, 3 to 8 percent slopes NWI Class:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_3/2 100 N/A N/A N/A N/A LOAM
4-18+ 10YR_6/8 100 N/A N/A N/A N/A LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B37 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>3</u> x 4 = <u>12</u>
5. _____				UPL <u>1</u> x 5 = <u>5</u>
6. _____				Sum: <u>5</u> (A) <u>19</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.46</u>
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Sassafras albidum</i>	3		FACU	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Vitis labrusca</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>16</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Pteridium aquilinum</i>	85.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Dennstaedtia punctilobula</i>	20.5		UPL	
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				
5. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
6. _____				
7. _____				Woody vine - All woody vines, regardless of height.
8. _____				
9. _____				Hydrophytic Vegetation Present? <u>No</u>
10. _____				
11. _____				
12. _____				
	<u>106</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B37 (wetland plot)

Project Site: A1/B2 Line City/County: Westminster / Worcester Samp. Date: 8/21/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B37 (wetland plot)
Investigator(s): Nicole Martin and Chris Wagner Section, Township, Range: Westminster
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR Lat: 42.54855 Long: -71.87678 Datum: NAD 83
Soil Map Unit: Allagash fine sandy loam, 3 to 8 percent slopes NWI Class: PSS Some PEM.
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5) Microtopographic Relief (D4)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 5
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows include 0-5 and 5-15+ depth intervals with soil characteristics like 10YR_2/1, 100% moisture, and MUCKY_LOAM texture.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B37 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>7</u> (A)
2. _____				# Dominants across all strata: <u>9</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>77.78%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>4</u> x 2 = <u>8</u>
3. _____				FAC <u>3</u> x 3 = <u>9</u>
4. _____				FACU <u>2</u> x 4 = <u>8</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>9</u> (A) <u>25</u> (B)
7. _____				Prevalence Index = B/A = <u>3.07</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Sassafras albidum</i>	10.5	X	FACU	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Spiraea alba</i>	10.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>21</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Impatiens capensis</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Apocynum androsaemifolium</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Osmunda claytoniana</i>	10.5	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago rugosa</i>	10.5	X	FAC	Woody vine - All woody vines, regardless of height.
6. <i>Parathelypteris noveboracensis</i>	10.5	X	FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>83</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. <i>Vitis labrusca</i>	63		FACU	<input type="checkbox"/> Yes
2. _____				
3. _____				
4. _____				
5. _____				
	<u>63</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Fitchburg, Massachusetts Forms

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WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B64 upland

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 9/23/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B64 upland
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Other Hillslope Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.54859 Long: -71.86065 Datum: _____
 Soil Map Unit: Paxton fine sandy loam NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_3/3	100		N/A	N/A	N/A	LOAMY_SAND	Rock refusal at 3 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B64 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Quercus rubra	3	X	FACU
2. Acer rubrum	3	X	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	6	= Total Cover	

Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0	= Total Cover	

Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Hamamelis virginiana	3	X	FACU
2. Kalmia latifolia	3	X	FACU
3. Vaccinium corymbosum	3	X	FACW
4. Fagus grandifolia	3	X	FACU
5. Doellingeria umbellata	3	X	FACW
6.			
7.			
8.			
	15	= Total Cover	

Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Dennstaedia punctilobula	38	X	UPL
2. Osmundastrum cinnamomeum	3		FACW
3. Aralia nudicaulis	3		FACU
4. Rubus hispidus	3		FACW
5. Acer rubrum	3		FAC
6. Quercus rubra	3		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	53	= Total Cover	

Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 3 (A)

Dominants across all strata: 8 (B)

% Dominants OBL, FACW, FAC: 37.50% (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply By:
OBL 0.0	x 1 = 0.0
FACW 12.0	x 2 = 24.0
FAC 6.0	x 3 = 18.0
FACU 18.0	x 4 = 72.0
UPL 38.0	x 5 = 190.0
Sum: 74.0 (A)	304.0 (B)

Prevalence Index = B/A = 4.11

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? No

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B64 wet

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 9/23/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B64 wet
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: FITCHBURG
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Other Hillslope Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.54866 Long: -71.86054 Datum: _____
 Soil Map Unit: Paxton fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	7.5YR_3/2	100		N/A	N/A	N/A	PEAT	Rock refusal at 3 inches. Depth for hydrocarbon soil not available

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B64 wet

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. <i>Acer rubrum</i>	20.5	X	FAC	# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 83.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	20	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. _____				OBL 3.0 x 1 = 3.0
2. _____				FACW 67.5 x 2 = 135.0
3. _____				FAC 31.0 x 3 = 93.0
4. _____				FACU 3.0 x 4 = 12.0
5. _____				UPL 3.0 x 5 = 15.0
6. _____				Sum: 107.5 (A) 258.0 (B)
7. _____				
8. _____				Prevalence Index = B/A = 2.40
	0	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Ilex verticillata</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Spiraea alba</i>	20.5	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Kalmia latifolia</i>	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	44	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Doellingeria umbellata</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Solidago rugosa</i>	10.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Carex_SP</i>	10.5	X	NULL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Onoclea sensibilis</i>	3		FACW	Woody vine - All woody vines, regardless of height.
5. <i>Osmundastrum cinnamomeum</i>	3		FACW	
6. <i>Juncus effusus</i>	3		OBL	
7. <i>Dennstaedtia punctilobula</i>	3		UPL	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	53	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B43 (upland plot)

Project Site: A1/B2 Line City/County: Fitchburg / Worcester Samp. Date: 8/26/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland B43 (upland plot)
 Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.54844 Long: -71.84315 Datum: NAD 83
 Soil Map Unit: Canton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes _____ Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation No _____, Soil No _____, or Hydrology No _____ significantly disturbed? Remarks: _____
 Are Vegetation No _____, Soil No _____, or Hydrology No _____ naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_3/3	100		N/A	N/A	N/A	PEAT	Organics
3-10	7.5YR_3/4	100		N/A	N/A	N/A	LOAMY_SAND	
10-15	7.5YR_5/6	50		N/A	N/A	N/A	LOAMY_SAND	
10-15	7.5YR_3/4	50		N/A	N/A	N/A	LOAMY_SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>15</u>	Hydric Soil Present? <u>No</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B43 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 1 x 1 = 1
3. _____				FACW 7 x 2 = 14
4. _____				FAC 2 x 3 = 6
5. _____				FACU 1 x 4 = 4
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 11 (A) 25 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 2.05
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	3	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Vaccinium corymbosum	3	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Viburnum dentatum	3	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	9	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Rubus hispidus	85.5	X	FACW	
2. Solidago rugosa	20.5		FAC	
3. Calamagrostis canadensis	20.5		OBL	
4. Spiraea alba	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
5. Osmundastrum cinnamomeum	10.5		FACW	
6. Thelypteris palustris	3		FACW	
7. Quercus rubra	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
8. Apios americana	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
9. _____				
10. _____				
11. _____				Woody vine - All woody vines, regardless of height.
12. _____				
	156	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B43 (wetland plot)

Project Site: A1/B2 Line City/County: Fitchburg / Worcester Samp. Date: 8/26/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland B43 (wetland plot)
 Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Flat Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.54850 Long: -71.84324 Datum: NAD 83
 Soil Map Unit: Canton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	Yes		
Wetland Hydrology Present?	Yes		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): N/A	Yes	
Water Table Present?	Depth (inches): N/A		
Saturation Present?	Depth (inches): 6		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Organics
3-9	10YR_3/2	80	5YR_3/4	20	C	PL	FINE_SANDY_LOAM	
9-13	10YR_4/2	60	5YR_3/4	40	C	PL	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: Rock		Yes	
Depth (inches): 13			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B43 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>3</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>1</u> x 1 = <u>1</u>
2. _____				FACW <u>5</u> x 2 = <u>10</u>
3. _____				FAC <u>3</u> x 3 = <u>9</u>
4. _____				FACU <u>0</u> x 4 = <u>0</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>9</u> (A) <u>20</u> (B)
7. _____				Prevalence Index = B/A = <u>2.13</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Clethra alnifolia</i>	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium corymbosum</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Alnus incana</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Viburnum dentatum</i>	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>37</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	85.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Spiraea alba</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago rugosa</i>	10.5		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Onoclea sensibilis</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Typha angustifolia</i>	3		OBL	Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>112</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B41 (upland plot)

Project Site: A1/B2 Line City/County: Fitchburg / Worcester Samp. Date: 8/26/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland B41 (upland plot)
 Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.54815 Long: -71.84028 Datum: NAD 83
 Soil Map Unit: Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	5YR_2.5/2	100		N/A	N/A	N/A	PEAT	Organics.

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Roots</u>		Hydric Soil Present?	<u>No</u>
Depth (inches): <u>2</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B41 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>41.5</u> x 2 = <u>83</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>79.5</u> x 4 = <u>318</u>
5. _____				UPL <u>20.5</u> x 5 = <u>102.5</u>
6. _____				Sum: <u>141.5</u> (A) <u>503.5</u> (B)
7. _____				Prevalence Index = B/A = <u>3.56</u>
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	63	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium corymbosum</i>	10.5		FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Lyonia ligustrina</i>	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>84</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Rubus hispidus</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Dennstaedtia punctilobula</i>	20.5	X	UPL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Pteridium aquilinum</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Kalmia latifolia</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Aralia nudicaulis</i>	3		FACU	Woody vine - All woody vines, regardless of height.
6. <i>Alnus incana</i>	0		FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>57</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				<u>No</u>
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B41 (wetland plot)

Project Site: A1/B2 Line City/County: Fitchburg / Worcester Samp. Date: 8/26/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland B41 (wetland plot)
 Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.54815 Long: -71.84036 Datum: NAD 83
 Soil Map Unit: Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present?	<u>Yes</u>	
Wetland Hydrology Present?	<u>Yes</u>	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>Yes</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>	
Saturation Present? <u>X</u>	Depth (inches): <u>2</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Other		

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/2	100		N/A	N/A	N/A	PEAT	Organics and sphagnum moss

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rocks.</u> Depth (inches): <u>3</u>	Hydric Soil Present? <u>Yes</u>
Remarks: Disturbed/problematic area with refusal that inhibited adequate analysis of the soil profile.	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B41 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 6 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 2 x 1 = 2
2. _____				FACW 7 x 2 = 14
3. _____				FAC 2 x 3 = 6
4. _____				FACU 0 x 4 = 0
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 11 (A) 22 (B)
7. _____				Prevalence Index = B/A = 2.43
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lyonia ligustrina</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Alnus incana</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	48	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Alnus incana</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Spiraea tomentosa</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Calamagrostis canadensis</i>	10.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Carex crinita</i>	10.5	X	OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Spiraea alba</i>	3		FACW	Woody vine - All woody vines, regardless of height.
6. <i>Osmundastrum cinnamomeum</i>	3		FACW	
7. <i>Rubus hispidus</i>	3		FACW	
8. <i>Acer rubrum</i>	3		FAC	
9. <i>Kalmia angustifolia</i>	3		FAC	
10. _____				
11. _____				
12. _____				
	67	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Upland plot B33

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 8/20/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Upland plot B33
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.54926 Long: -71.82892 Datum: GCS WGS 1984
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	<u>No</u>	
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-9	10YR_3/4	100		N/A	N/A	N/A	LOAMY_SAND	Refusal at 9 inches
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.					² Location: PL=Pore Lining, M=Matrix.			
Hydric Soil Indicators:					Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)				
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)				
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)				
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)				
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)				
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)				
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)				
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)				
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
Restrictive Layer (if observed):					Hydric Soil Present?			
Type: _____					<u>No</u>			
Depth (inches): _____								
Remarks:								

VEGETATION - Use scientific names of plants.



Sampling Point: Upland plot B33

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>40.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>3</u> x 4 = <u>12</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>6</u> (A) <u>20</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>3.44</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. <i>Carya glabra</i>	3	X	FACU	<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>3</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Solidago rugosa</i>	10.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Solidago canadensis</i>	10.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Frangula alnus</i>	10.5	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Vitis labrusca</i>	10.5	X	FACU	Woody vine - All woody vines, regardless of height.
5. <i>Rubus hispidus</i>	3		FACW	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>45</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B33 wet

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 8/20/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B33 wet
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.54922 Long: -71.82882 Datum: GCS WGS 1984
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>-</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: <u>Wetland hydrology and vegetation observed. See soil remarks below.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? <u>_____</u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present? <u>_____</u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u>_____</u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Oe, Moderately decomposed
4-8	5YR_3/3	100		N/A	N/A	N/A	FINE_SANDY_LOAM	A Horizon
8-16	7.5YR_3/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	B Horizon

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: <u>Observed low chroma soils starting within the first 12 inches and extending at least 6 inches</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: B33 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 7 (A)
2. _____				# Dominants across all strata: 8 (B)
3. _____				% Dominants OBL, FACW, FAC: 87.50% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 3 x 2 = 6
4. _____				FAC 5 x 3 = 15
5. _____				FACU 1 x 4 = 4
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 9 (A) 25 (B)
8. _____				Prevalence Index = B/A = 3.06
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	38	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Viburnum dentatum	3		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	41	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Osmundastrum cinnamomeum	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Thelypteris palustris	3	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Onoclea sensibilis	3	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Frangula alnus	3	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Viburnum dentatum	3	X	FAC	Woody vine - All woody vines, regardless of height.
6. Parthenocissus quinquefolia	3	X	FACU	
7. Toxicodendron radicans	3	X	FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	28	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				<input type="checkbox"/> Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Up plot B31

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 8/20/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Up plot B31
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: FITCHBURG
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.54918 Long: -71.82670 Datum: GCS WGS 1984
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	5YR_2.5/2	100		N/A	N/A	N/A	PEAT	Organic layer moderately decomposed
3-5	7.5YR_2.5/3	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock Refusal at 5 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Rock</u>		Hydric Soil Present?	<u>No</u>
Depth (inches): <u>5</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Up plot B31

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>2</u> x 2 = <u>4</u>
3. _____				FAC <u>3</u> x 3 = <u>9</u>
4. _____				FACU <u>3</u> x 4 = <u>12</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>8</u> (A) <u>25</u> (B)
7. _____				
8. _____				Prevalence Index = B/A = <u>3.59</u>
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<u> </u> Dominance Test is > 50%
1. <u>Quercus rubra</u>	<u>10.5</u>	<u>X</u>	<u>FACU</u>	<u> </u> Prevalence Index is <= 3.0
2. <u>Betula populifolia</u>	<u>3</u>	<u>X</u>	<u>FAC</u>	<u> </u> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<u> </u> Rapid Test for Hydrophytic Vegetation
4. _____				<u> </u> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				Definitions of Vegetation Strata:
	<u>13</u>	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: <u>5 ft</u>)				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
1. <u>Pteridium aquilinum</u>	<u>63</u>	<u>X</u>	<u>FACU</u>	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
2. <u>Pyrola americana</u>	<u>10.5</u>		<u>FAC</u>	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. <u>Rubus hispidus</u>	<u>10.5</u>		<u>FACW</u>	
4. <u>Ilex verticillata</u>	<u>3</u>		<u>FACW</u>	Woody vine - All woody vines, regardless of height.
5. <u>Acer rubrum</u>	<u>3</u>		<u>FAC</u>	
6. <u>Quercus rubra</u>	<u>3</u>		<u>FACU</u>	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>93</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet plot B31

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 8/20/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wet plot B31
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: FITCHBURG
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.54911 Long: -71.82675 Datum:
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	Yes		
Wetland Hydrology Present?	Yes		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): N/A	Yes	
Water Table Present?	Depth (inches): N/A		
Saturation Present?	Depth (inches): N/A		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	5YR_2.5/2	100		N/A	N/A	N/A	PEAT	Organic layer
2-12	7.5YR_2.5/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
12-16	10YR_5/2	66	10YR_5/6	33	C	M	FINE_SANDY_LOAM	B layer

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	Yes
Type:			
Depth (inches):			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot B31

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 1 x 1 = 1
3. _____				FACW 2 x 2 = 4
4. _____				FAC 1 x 3 = 3
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 4 (A) 8 (B)
8. _____				Prevalence Index = B/A = 2.22
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Vaccinium corymbosum	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Acer rubrum	10.5	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	31	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Carex X_SP	3	X	NULL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Juncus effusus	3	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	6	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Leominster, Massachusetts Forms

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WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Upland B36

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 9/23/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Upland B36
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.54888 Long: -71.83267 Datum: _____
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	7.5YR_3/3	100		N/A	N/A	N/A	PEAT	
1-3	10YR_3/2	100		N/A	N/A	N/A	LOAMY_SAND	
3-7	10YR_5/8	100		N/A	N/A	N/A	LOAMY_SAND	
7-13	10YR_6/6	100		N/A	N/A	N/A	LOAMY_SAND	Refusal at 13inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?	<u>No</u>
Type: _____		
Depth (inches): _____		
Remarks: _____		

VEGETATION - Use scientific names of plants.



Sampling Point: Upland B36

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>60.00%</u> (A/B)
1. <u>Pinus strobus</u>	3	X	FACU	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
			3 = Total Cover	
Sapling Stratum (Plot size: <u>30 ft</u>)				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0</u> x 1 = <u>0</u> FACW <u>2</u> x 2 = <u>4</u> FAC <u>3</u> x 3 = <u>9</u> FACU <u>3</u> x 4 = <u>12</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>8</u> (A) <u>25</u> (B) Prevalence Index = B/A = <u>3.33</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
			0 = Total Cover	
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <u>Vaccinium corymbosum</u>	3	X	FACW	
2. <u>Frangula alnus</u>	3	X	FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
			6 = Total Cover	
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <u>Juniperus communis</u>	38	X	FACU	
2. <u>Kalmia angustifolia</u>	20.5	X	FAC	
3. <u>Rubus hispidus</u>	10.5		FACW	
4. <u>Pyrola americana</u>	10.5		FAC	
5. <u>Pteridium aquilinum</u>	3		FACU	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
			82 = Total Cover	
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
			0 = Total Cover	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B36 wet plot

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 9/23/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B36 wet plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.54884 Long: -71.83261 Datum: _____
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row recent cutting
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>-</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: <u>Wetland hydrology and vegetation observed, see soil notes below</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:			
Surface Water Present?	<u>No</u>	Depth (inches):	<u>N/A</u>
Water Table Present?	<u>No</u>	Depth (inches):	<u>N/A</u>
Saturation Present?	<u>No</u>	Depth (inches):	<u>N/A</u>
		Wetland Hydrology Present?	<u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	5YR_3/3	100		N/A	N/A	N/A	PEAT	Refusal at 3 inches. No hydric soil indicator met

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/>	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/>	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/>	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/>	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/>	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/>	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/>	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/>	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/>		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/>		<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/>		<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/>		<input type="checkbox"/> Other (Explain in Remarks)
		³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:	<u>Cobble/stone</u>	<u>-</u>	
Depth (inches):	<u>3</u>		
Remarks: <u>Unable to verify hydric soils due to restrictive layer.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: B36 wet plot

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. <i>Quercus rubra</i>	3	X	FACU	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 8 (A) # Dominants across all strata: 9 (B) % Dominants OBL, FACW, FAC: 88.89% (A/B)	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
	3	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL 0 x 1 = 0 FACW 3 x 2 = 6 FAC 6 x 3 = 18 FACU 1 x 4 = 4 UPL 0 x 5 = 0 Sum: 10 (A) 28 (B) Prevalence Index = B/A = 3.07	
Sapling Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. <i>Vaccinium corymbosum</i>	10.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <i>Ilex verticillata</i>	10.5	X	FACW		
3. <i>Viburnum dentatum</i>	3		FAC		
4.					
5.					
6.					
7.					
8.					
	24	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. <i>Pyrola americana</i>	3	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Rubus hispidus</i>	3	X	FACW		
3. <i>Kalmia angustifolia</i>	3	X	FAC		
4. <i>Frangula alnus</i>	3	X	FAC		
5. <i>Cornus canadensis</i>	3	X	FAC		
6. <i>Dichanthelium boreale</i>	3	X	FAC		
7.					
8.					
9.					
10.					
11.					
12.					
	18	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
5.					
	0	= Total Cover		Hydrophytic Vegetation Present? Yes	

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B35 Upland plot

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 8/20/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B35 Upland plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.54916 Long: -71.83113 Datum: _____
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? - _____ If needed, explain any answers in Remarks: _____
 Are Vegetation - _____, Soil - _____, or Hydrology - _____ significantly disturbed? Remarks: _____
 Are Vegetation - _____, Soil - _____, or Hydrology - _____ naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>-</u>	
Wetland Hydrology Present? <u>-</u>	
Remarks: <u>Plot not taken - within Roadway shoulder of Route 2</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>-</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>-</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: B35 Upland plot

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>0</u> (A)
2. _____				# Dominants across all strata: <u>0</u> (B)
3. _____				% Dominants OBL, FACW, FAC: _____ (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>0</u> x 2 = <u>0</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>0</u> x 4 = <u>0</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>0</u> (A)
7. _____				<u>0</u> (B)
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				_____ Dominance Test is > 50%
1. _____				_____ Prevalence Index is <= 3.0
2. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				_____ Rapid Test for Hydrophytic Vegetation
4. _____				_____ Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B35 Wet plot

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 8/20/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B35 Wet plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.54912 Long: -71.83114 Datum: _____
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> X	<input type="checkbox"/>	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/>	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u> </u> Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	<u> </u> Depth (inches): <u>N/A</u>		
Saturation Present?	<u>X</u> <u> </u> Depth (inches): <u>7</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR_2/1	100		N/A	N/A	N/A	SANDY_LOAM	Organic layer moderately decomposed
2-7	10YR_3/2	100		N/A	N/A	N/A	LOAMY_SAND	
7-14	10YR_2/1	100		N/A	N/A	N/A	COARSE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: B35 Wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>1</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0</u> x 1 = <u>0</u> FACW <u>2</u> x 2 = <u>4</u> FAC <u>1</u> x 3 = <u>3</u> FACU <u>0</u> x 4 = <u>0</u> UPL <u>0</u> x 5 = <u>0</u> Sum: <u>3</u> (A) <u>7</u> (B) Prevalence Index = B/A = <u>2.03</u>
Sapling Stratum (Plot size: 30 ft) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____				
	<u>0</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft) 1. Phragmites australis 85.5 X FACW 2. Solidago rugosa 3 FAC 3. Spiraea alba 3 FACW 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____				
	<u>91</u>	= Total Cover		
Woody Vines (Plot size: 30 ft) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____				
	<u>0</u>	= Total Cover		

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B30 upland

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 8/13/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B30 upland
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.54683 Long: -71.82263 Datum: _____
 Soil Map Unit: Canton fine sandy loam NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	5YR_3/4	75	10YR_3/3	N/A	RM	N/A	FINE_SANDY_LOAM	
8-13	5YR_3/4	100		N/A	N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: B30 upland

	Absolute % Cover	Dom. Sp?	Indicator Status		
Tree Stratum (Plot size: 30 ft)					
1. Acer rubrum	10.5	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>13</u> (B) % Dominants OBL, FACW, FAC: <u>30.77%</u> (A/B)	
2. Quercus alba	10.5	X	FACU		
3. Prunus serotina	10.5	X	FACU		
4. Rhus typhina	10.5	X	UPL		
5. _____					
6. _____					
7. _____					
8. _____					
	42	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>6.0</u> x 2 = <u>12.0</u> FAC <u>51.5</u> x 3 = <u>154.5</u> FACU <u>30.0</u> x 4 = <u>120.0</u> UPL <u>52.0</u> x 5 = <u>260.0</u> Sum: <u>139.5</u> (A) <u>546.5</u> (B) Prevalence Index = B/A = <u>3.92</u>	
Sapling Stratum (Plot size: 30 ft)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	0	= Total Cover			
Shrub Stratum (Plot size: 15 ft)					
1. Viburnum dentatum	38	X	FAC	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. Rhus copallinum	20.5	X	UPL		
3. Vaccinium corymbosum	3		FACW		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	61	= Total Cover			
Herb Stratum (Plot size: 5 ft)					
1. Dennstaedia punctilobula	10.5	X	UPL	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
2. Solidago rugosa	3	X	FAC		
3. Rubus hispidus	3	X	FACW		
4. Dendrolycopodium obscurum	3	X	FACU		
5. Quercus alba	3	X	FACU		
6. Maianthemum canadense	3	X	FACU		
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	25	= Total Cover			
Woody Vines (Plot size: 30 ft)					
1. Celastrus orbiculatus	10.5		UPL	Hydrophytic Vegetation Present? <u>No</u>	
2. _____					
3. _____					
4. _____					
5. _____					
	10	= Total Cover			

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B30 wet

Project Site: A1B2 City/County: Fitchburg / Worcester Samp. Date: 8/13/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland B30 wet
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.54668 Long: -71.82222 Datum: _____
 Soil Map Unit: Swansea muck NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> X	<input type="checkbox"/>	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/>	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/>	<input type="checkbox"/>		

Field Observations:

Surface Water Present?	<input type="checkbox"/>	Depth (inches):	<u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	<input checked="" type="checkbox"/> X	Depth (inches):	<u>12</u>		
Saturation Present?	<input checked="" type="checkbox"/> X	Depth (inches):	<u>Surface</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: _____

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	10YR_2/2	100		N/A	N/A	N/A	MUCKY_LOAM	Mucky fine sandy clay loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/>	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/>	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/>	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/>	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/>	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/>	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/>	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/>	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/>		<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/>		<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/>		<input type="checkbox"/> Other (Explain in Remarks)

Restrictive Layer (if observed):

Type: _____	Hydric Soil Present?	<u>Yes</u>
Depth (inches): _____		

Remarks: _____

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B30 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 4 x 1 = 4
3. _____				FACW 4 x 2 = 8
4. _____				FAC 0 x 3 = 0
5. _____				FACU 0 x 4 = 0
6. _____				UPL 1 x 5 = 5
7. _____				Sum: 9 (A) 17 (B)
8. _____				Prevalence Index = B/A = 1.42
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Spiraea latifolia</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Vaccinium corymbosum</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Ilex verticillata</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Typha latifolia</i>	63	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Spiraea latifolia</i>	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Soliva sessilis</i>	3		UPL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Juncus effusus</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Dulichium arundinaceum</i>	3		OBL	
6. <i>Lythrum salicaria</i>	3		OBL	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	85	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

b29 upland

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 8/13/2020
 Applicant/Owner: National Grid State: MA Sampling Point: b29 upland
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.54314 Long: -71.81576 Datum: GCS WGS 1984
 Soil Map Unit: Windsor sandy loam NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	7.5YR_2.5/3	100		N/A	N/A	N/A	SANDY_LOAM	Ap, cobble at 10 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Cobble</u>		Hydric Soil Present?	<u>No</u>
Depth (inches): <u>10</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: b29 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Rhus copallinum	20.5	X	UPL	Total % Cover of:
2. _____				OBL <u>0</u> x 1 = <u>0</u>
3. _____				FACW <u>3</u> x 2 = <u>6</u>
4. _____				FAC <u>23.5</u> x 3 = <u>70.5</u>
5. _____				FACU <u>0</u> x 4 = <u>0</u>
6. _____				UPL <u>20.5</u> x 5 = <u>102.5</u>
7. _____				Sum: <u>47</u> (A) <u>179</u> (B)
8. _____				Prevalence Index = B/A = <u>3.81</u>
	<u>20</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Solidago rugosa	20.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Frangula alnus	3		FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Spiraea latifolia	3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>26</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>No</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B29 wetland plot

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 8/13/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B29 wetland plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.54315 Long: -71.81586 Datum: GCS WGS 1984
 Soil Map Unit: Windsor loamy sand NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	<u> </u> Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	<u> </u> Depth (inches): <u>N/A</u>		
Saturation Present?	<u>X</u> <u> </u> Depth (inches): <u>12</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-13	7.5YR_3/2	100		N/A	N/A	N/A	SANDY_LOAM	Ap layer, saturation at 12
13		100		N/A	N/A	N/A		Cobble and pebble layer

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u> </u>		Hydric Soil Present?	<u>Yes</u>
Depth (inches): <u> </u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B29 wetland plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 1 x 1 = 1
3. _____				FACW 3 x 2 = 6
4. _____				FAC 2 x 3 = 6
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 6 (A) 13 (B)
8. _____				Prevalence Index = B/A = 2.43
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Solidago rugosa	38	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Onoclea sensibilis	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Spiraea latifolia	20.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Juncus effusus	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Rubus hispidus	3		FACW	Woody vine - All woody vines, regardless of height.
6. Frangula alnus	3		FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	88	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B27 upland plot

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 9/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B27 upland plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.54171 Long: -71.81287 Datum: _____
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? - Remarks: _____
 Are Normal Circumstances present? - If needed, explain any answers in Remarks: _____
 Are Vegetation -, Soil -, or Hydrology - significantly disturbed? Remarks: Maintained utility row
 Are Vegetation -, Soil -, or Hydrology - naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? <u>_____</u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? <u>_____</u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u>_____</u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	5YR_3/2	100		N/A	N/A	N/A	PEAT	
3-8	10YR_2/2	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Rock refusal at 8 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: _____		Hydric Soil Present?	<u>No</u>
Depth (inches): _____			
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B27 upland plot

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0.0</u> x 1 = <u>0.0</u>
2. _____				FACW <u>3.0</u> x 2 = <u>6.0</u>
3. _____				FAC <u>69.0</u> x 3 = <u>207.0</u>
4. _____				FACU <u>10.5</u> x 4 = <u>42.0</u>
5. _____				UPL <u>0.0</u> x 5 = <u>0.0</u>
6. _____				Sum: <u>82.5</u> (A) <u>255.0</u> (B)
7. _____				
8. _____				Prevalence Index = B/A = <u>3.09</u>
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <u>Acer rubrum</u>	<u>3</u>	<u>X</u>	<u>FAC</u>	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				Definitions of Vegetation Strata:
	<u>3</u>	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: <u>5 ft</u>)				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
1. <u>Kalmia angustifolia</u>	<u>63</u>	<u>X</u>	<u>FAC</u>	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
2. <u>Quercus rubra</u>	<u>10.5</u>		<u>FACU</u>	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. <u>Betula populifolia</u>	<u>3</u>		<u>FAC</u>	
4. <u>Rubus hispidus</u>	<u>3</u>		<u>FACW</u>	Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>79</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B27 wetland

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 8/25/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B27 wetland
 Investigator(s): Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Undulating Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.54180 Long: -71.81290 Datum: _____
 Soil Map Unit: Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology - significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Profile moist but not saturated as evidenced by lack of glistening ped faces and absence of an existing water table.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
3	7.5YR_2.5/2	100		N/A	N/A	N/A	PEAT	
10	7.5YR_2.5/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
16	10YR_4/1	66	10YR_4/2	33	D	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>Yes</u>	
Depth (inches): _____			
Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: B27 wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 8 (A)
2. _____				# Dominants across all strata: 8 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 1 x 1 = 1
3. _____				FACW 5 x 2 = 10
4. _____				FAC 10 x 3 = 30
5. _____				FACU 0 x 4 = 0
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 16 (A) 41 (B)
8. _____				Prevalence Index = B/A = 2.60
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Viburnum dentatum	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Nyssa sylvatica	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Acer rubrum	10.5	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Betula populifolia	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	34	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Osmundastrum cinnamomeum	10.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Thelypteris palustris	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Frangula alnus	10.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Acer rubrum	10.5	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Rubus hispidus	10.5	X	FACW	Woody vine - All woody vines, regardless of height.
6. Betula populifolia	3		FAC	
7. Spiraea alba	3		FACW	
8. Solidago rugosa	3		FAC	
9. Scirpus cyperinus	3		OBL	
10. Euthamia graminifolia	3		FAC	
11. Doellingeria umbellata	3		FACW	
12. Pyrola americana	3		FAC	
	73	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Up plot B26

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 9/23/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Up plot B26
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Other Slope Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.54088 Long: -71.81210 Datum: _____
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	7.5YR_3/3	100		N/A	N/A	N/A	LOAMY_SAND	Refusal at 4 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Up plot B26

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 1 x 2 = 2
3. _____				FAC 5 x 3 = 15
4. _____				FACU 2 x 4 = 8
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 8 (A) 25 (B)
7. _____				Prevalence Index = B/A = 3.27
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	20.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Viburnum dentatum	3		FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Acer rubrum	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Ilex verticillata	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	29	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Rubus idaeus	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Solidago rugosa	20.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Frangula alnus	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Pteridium aquilinum	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	47	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks: (If observed, list morphological adaptations below).
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wet B26

Project Site: A1B2 City/County: Leominster / Worcester State: MA Samp. Date: 9/23/2020
 Applicant/Owner: National Grid Sampling Point: Wet B26
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Other Slope side Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.54091 Long: -71.81228 Datum:
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	Is This Sample Area Within a Wetland?	Yes
Hydric Soil Present?	-		
Wetland Hydrology Present?	Yes		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	No	Depth (inches):	N/A
Water Table Present?	No	Depth (inches):	N/A
Saturation Present?	No	Depth (inches):	N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	7.5YR_2.5/2	100	7.5YR_4/1	8	D	M	LOAMY_SAND	Depth for hydric soil indicators not available

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?
Type: Cobble	-
Depth (inches): 3	
Remarks: Due to restrictive layer, unable to verify hydric soil criteria. Hydrology and vegetation parameters met and low chroma noted in observed soils.	

VEGETATION - Use scientific names of plants.



Sampling Point: Wet B26

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				
1. Acer rubrum	20.5	X	FAC	
2.				
3.				
4.				
5.				
6.				
7.				
8.				
	20	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. Acer rubrum	20.5	X	FAC	
2. Ilex verticillata	20.5	X	FACW	
3.				
4.				
5.				
6.				
7.				
8.				
	41	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. Rubus hispidus	20.5	X	FACW	
2. Osmundastrum cinnamomeum	20.5	X	FACW	
3. Spiraea alba	10.5	X	FACW	
4. Frangula alnus	10.5	X	FAC	
5. Solidago rugosa	10.5	X	FAC	
6. Rubus idaeus	10.5	X	FACU	
7. Viburnum dentatum	3		FAC	
8.				
9.				
10.				
11.				
12.				
	86	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. Vitis labrusca	10.5		FACU	
2.				
3.				
4.				
5.				
	10	= Total Cover		

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 8 (A)

Dominants across all strata: 10 (B)

% Dominants OBL, FACW, FAC: 80.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	<u>0</u>	x 1 = <u>0</u>
FACW	<u>4</u>	x 2 = <u>8</u>
FAC	<u>5</u>	x 3 = <u>15</u>
FACU	<u>2</u>	x 4 = <u>8</u>
UPL	<u>0</u>	x 5 = <u>0</u>
Sum:	<u>11</u> (A)	<u>31</u> (B)

Prevalence Index = B/A = 2.87

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B25 (upland plot)

Project Site: A1/B2 Line City/County: Leominster / Worcester Samp. Date: 7/23/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland B25 (upland plot)
 Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.53992 Long: -71.81088 Datum: NAD 83
 Soil Map Unit: Woodbridge fine sandy loam, 8 to 15 percent slopes, extremely stony NWI Class:
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
 Are Vegetation No, Soil No, or Hydrology - naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	7.5YR_3/4	100		N/A	N/A	N/A	SANDY_LOAM	
5-12	7.5YR_5/4	100		N/A	N/A	N/A	LOAMY_SAND	Fine loamy sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>No</u>
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B25 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 7 (B)
3. _____				% Dominants OBL, FACW, FAC: 42.86% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Pinus strobus	10.5	X	FACU	Total % Cover of: OBL 0 x 1 = 0
2. Acer rubrum	3	X	FAC	FACW 3 x 2 = 6
3. _____				FAC 3 x 3 = 9
4. _____				FACU 7 x 4 = 28
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 13 (A) 43 (B)
7. _____				Prevalence Index = B/A = 3.11
8. _____				
	13	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Pinus strobus	10.5	X	FACU	Dominance Test is > 50%
2. Ilex verticillata	3	X	FACW	Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	13	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Pyrola americana	38	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Kalmia latifolia	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Plantago lanceolata	10.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Dendrolycopodium obscurum	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Carex alopecoidea	3		FACW	Woody vine - All woody vines, regardless of height.
6. Rubus hispidus	3		FACW	
7. Solidago caesia	3		FACU	
8. Betula populifolia	3		FAC	
9. Parthenocissus quinquefolia	3		FACU	
10. _____				
11. _____				
12. _____				
	77	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B25 (wetland plot)

Project Site: A1/B2 Line City/County: Leominster / Worcester Samp. Date: 7/23/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland B25 (wetland plot)
 Investigator(s): Nicole Martin and Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.53992 Long: -71.81078 Datum: NAD 83
 Soil Map Unit: Woodbridge fine sandy loam, 8 to 15 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>Yes</u>
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>	
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR_2/2	100		N/A	N/A	N/A	SANDY_LOAM	
4-8	10YR_3/1	50		N/A	N/A	N/A	SANDY_LOAM	
	10YR_4/1	40	7.5YR_4/6	10	C	M	SANDY_LOAM	
8-15	10YR_5/1	100		N/A	N/A	N/A	SANDY_LOAM	Fine sandy loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: <u> </u> Depth (inches): <u> </u>	Hydric Soil Present? <u>Yes</u>
--------------------------------------------------------------------------------------------------	---------------------------------

Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B25 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 83.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. Acer rubrum	3	X	FAC	OBL 0 x 1 = 0
2. Pinus strobus	3	X	FACU	FACW 4 x 2 = 8
3. _____				FAC 5 x 3 = 15
4. _____				FACU 4 x 4 = 16
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 13 (A) 39 (B)
7. _____				Prevalence Index = B/A = 2.67
8. _____				
6 = Total Cover				Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Acer rubrum	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
2. Ilex verticillata	10.5	X	FACW	Problematic Hydrophytic Vegetation ¹ (explain)
3. Pinus strobus	3		FACU	Rapid Test for Hydrophytic Vegetation
4. Vaccinium corymbosum	3		FACW	Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
27 = Total Cover				Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Ilex verticillata	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Rubus hispidus	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Kalmia latifolia	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Pyrola americana	3		FAC	Woody vine - All woody vines, regardless of height.
5. Solidago rugosa	3		FAC	
6. Solidago caesia	3		FACU	
7. Viburnum dentatum	3		FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
36 = Total Cover				Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B24 upland

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/5/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B24 upland
 Investigator(s): Jay Quattrocchi Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Undulating Slope (%): 1-2%
 Subregion (LRR or MLRA): _____ Lat: 42.53008 Long: -71.80710 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	

Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
4	10YR_2/2	100		N/A	N/A	FINE_SANDY_LOAM	Low chroma, but does not meet depth requirements

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Cobble</u> Depth (inches): <u>4</u>		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B24 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 3.0 x 2 = 6.0
4. _____				FAC 34.0 x 3 = 102.0
5. _____				FACU 52.0 x 4 = 208.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 89.0 (A) 316.0 (B)
8. _____				Prevalence Index = B/A = 3.55
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	20.5	X	FACU	_____ Dominance Test is > 50%
2. _____				_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	20	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Pyrola americana</i>	20.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Pteridium aquilinum</i>	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Kalmia angustifolia</i>	10.5	X	FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Juniperus communis</i>	10.5	X	FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Solidago canadensis</i>	10.5	X	FACU	Woody vine - All woody vines, regardless of height.
6. <i>Solidago rugosa</i>	3		FAC	
7. <i>Rubus hispida</i>	3		FACW	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	68	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B24 wetland

Project Site: A1B2 City/County: Leominster / Worcester State: MA Samp. Date: 11/5/2020
 Applicant/Owner: _____ Sampling Point: B24 wetland
 Investigator(s): Jay Quattrocchi Section, Township, Range: Fitchburg
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Undulating Slope (%): 1-2%
 Subregion (LRR or MLRA): _____ Lat: 42.52997 Long: -71.80699 Datum: _____
 Soil Map Unit: _____ NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology Yes significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

Wetland located in path - tire ruts

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13)</p> <p><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15)</p> <p><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)</p> <p><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p>Secondary Indicators (minimum of two required)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input checked="" type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
<p>Field Observations:</p> <p>Surface Water Present? _____ Depth (inches): <u>N/A</u></p> <p>Water Table Present? _____ Depth (inches): <u>N/A</u></p> <p>Saturation Present? _____ Depth (inches): <u>N/A</u></p>	<p>Wetland Hydrology Present? <u>Yes</u></p>
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>	
<p>Remarks: Other</p>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
2	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Heavy stone cobble in ROW

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</p> <p><input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)</p> <p><input type="checkbox"/> Red Parent Material (F21)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>	
<p>Restrictive Layer (if observed):</p> <p>Type: <u>Cobble</u></p> <p>Depth (inches): <u>2</u></p>	<p>Hydric Soil Present? <u>No</u></p>
<p>Remarks: Other</p>	

VEGETATION - Use scientific names of plants.



Sampling Point: B24 wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 8 (A)
2. _____				# Dominants across all strata: 10 (B)
3. _____				% Dominants OBL, FACW, FAC: 80.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 31.0 x 1 = 31.0
3. _____				FACW 44.5 x 2 = 89.0
4. _____				FAC 51.5 x 3 = 154.5
5. _____				FACU 10.5 x 4 = 42.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 137.5 (A) 316.5 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 2.30
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Viburnum dentatum	20.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Pinus strobus	10.5	X	FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	51	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Solidago rugosa	20.5	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Juncus effusus	20.5	X	OBL	
3. Spiraea alba	10.5	X	FACW	
4. Rubus hispidus	10.5	X	FACW	
5. Scirpus cyperinus	10.5	X	OBL	
6. Carex X_SP	10.5	X	NULL	
7. Euthamia graminifolia	10.5	X	FAC	
8. Deschampsia caespitosa	3		FACW	
9. _____				
10. _____				
11. _____				
12. _____				
	96	= Total Cover		Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
1. _____				Woody vine - All woody vines, regardless of height.
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.

Can not verify hydric soils due to restrictive layer



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Up B23

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 7/16/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Up B23
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.52883 Long: -71.80637 Datum: _____
 Soil Map Unit: Chatfield-Hollis rock outcrop NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	7.5YR_2.5/3	100		N/A	N/A	N/A	PEAT	Peat moss layer
4-6	10YR_2/1	100		N/A	N/A	N/A	SANDY_LOAM	Refusal at 6 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: Up B23

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 6 (B)
3. _____				% Dominants OBL, FACW, FAC: 50.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. Acer rubrum	3	X	FAC	OBL 0 x 1 = 0
2. Pinus strobus	3	X	FACU	FACW 3 x 2 = 6
3. _____				FAC 3 x 3 = 9
4. _____				FACU 4 x 4 = 16
5. _____				UPL 1 x 5 = 5
6. _____				Sum: 11 (A) 36 (B)
7. _____				Prevalence Index = B/A = 2.67
8. _____				
	6	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Kalmia latifolia	20.5	X	FACU	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
2. Kalmia angustifolia	20.5	X	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. Acer rubrum	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. Spiraea alba	3		FACW	<input type="checkbox"/> Morphological Adaptations
5. Lyonia ligustrina	3		FACW	
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	50	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Pteridium aquilinum	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Rubus hispidus	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Solidago canadensis	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Carex X_SP	3		NULL	Woody vine - All woody vines, regardless of height.
5. Dennstaedtia punctilobula	3		UPL	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	30	= Total Cover		Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B23 wet plot

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 7/16/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B23 wet plot
 Investigator(s): Jay Quattrocchi and Emily Martin Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): LRR Lat: 42.52878 Long: -71.80640 Datum: _____
 Soil Map Unit: Chatfield-Hollis rock outcrop NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility row
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u>X</u> Depth (inches): <u>1</u>	<u>Yes</u>	
Water Table Present?	<u>X</u> Depth (inches): <u>4</u>		
Saturation Present?	<u>X</u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-6	10YR_3/2	100		N/A	N/A		Oi fibrous roots. Little decomposition-twigs, roots. Rock refusal at 6 inches
3-0		100		N/A	N/A		Sphagnum mass

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input checked="" type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>Yes</u>	
Depth (inches): _____			
Remarks: _____			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B23 wet plot

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>4</u> (A)
2. _____				# Dominants across all strata: <u>5</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>80.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Acer rubrum	3	X	FAC	Total % Cover of:
2. _____				OBL <u>2</u> x 1 = <u>2</u>
3. _____				FACW <u>5</u> x 2 = <u>10</u>
4. _____				FAC <u>4</u> x 3 = <u>12</u>
5. _____				FACU <u>1</u> x 4 = <u>4</u>
6. _____				UPL <u>0</u> x 5 = <u>0</u>
7. _____				Sum: <u>12</u> (A) <u>28</u> (B)
8. _____				Prevalence Index = B/A = <u>2.18</u>
	<u>3</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Vaccinium corymbosum	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Viburnum dentatum	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. Kalmia latifolia	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Frangula alnus	3		FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>27</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Carex X_SP	38	X	NULL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Juncus effusus	10.5		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Acer rubrum	10.5		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Spiraea alba	10.5		FACW	Woody vine - All woody vines, regardless of height.
6. Osmundastrum cinnamomeum	3		FACW	
7. Eutrochium_SP	3		NULL	
8. Thelypteris palustris	3		FACW	
9. Scirpus expansus	3		OBL	
10. _____				
11. _____				
12. _____				
	<u>119</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (if observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B22 upland

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/5/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B22 upland
 Investigator(s): Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Undulating Slope (%): 1-2%
 Subregion (LRR or MLRA): _____ Lat: 42.52377 Long: -71.80337 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	

Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Rock cobble</u> Depth (inches): <u>2</u>		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B22 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 33.33% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0.0 x 1 = 0.0
3. _____				FACW 10.5 x 2 = 21.0
4. _____				FAC 85.5 x 3 = 256.5
5. _____				FACU 21.0 x 4 = 84.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 117.0 (A) 361.5 (B)
8. _____				Prevalence Index = B/A = 3.09
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Pinus strobus	10.5	X	FACU	Dominance Test is > 50%
2. Kalmia latifolia	10.5	X	FACU	Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	21	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Kalmia angustifolia	85.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	96	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Hydrophytic Vegetation Present? No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B22 wetlan

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/5/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B22 wetlan
 Investigator(s): Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Undulating Slope (%): <1%
 Subregion (LRR or MLRA): _____ Lat: 42.52380 Long: -71.80347 Datum: _____
 Soil Map Unit: _____ NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Other			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10 YR 2/1	100					peat	
2-12	10 YR 2/2	100					fine sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>Yes</u>	
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B22 wetlan

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>58.5</u> x 2 = <u>117.0</u> FAC <u>41.5</u> x 3 = <u>124.5</u> FACU <u>10.5</u> x 4 = <u>42.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>110.5</u> (A) <u>283.5</u> (B) Prevalence Index = B/A = <u>2.57</u>
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <i>Lyonia ligustrina</i>	38	X	FACW	
2. <i>Pinus strobus</i>	10.5		FACU	
3. <i>Acer rubrum</i>	10.5		FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>59</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Ilex verticillata</i>	20.5	X	FACW	
2. <i>Pyrola americana</i>	20.5	X	FAC	
3. <i>Kalmia angustifolia</i>	10.5	X	FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>51</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B20 upland

Project Site: A1/B2 City/County: Leominster / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B20 upland
 Investigator(s): Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): _____ Lat: 42.51795 Long: -71.79741 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
5	5YR_3/3	100		N/A	N/A	N/A	PEAT	O peat
9	7.5YR_2.5/2	60	7.5YR_4/3	30	N/A	M	FINE_SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Cobble/Rock</u>		Hydric Soil Present?	<u>Yes</u>
Depth (inches): <u>9</u>			
Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: B20 upland

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: 30 ft)				
1. Acer rubrum	3	X	FAC	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: 4 (A) # Dominants across all strata: 7 (B) % Dominants OBL, FACW, FAC: 57.14% (A/B)
2.				
3.				
4.				
5.				
6.				
7.				
8.				
	3	= Total Cover		
Sapling Stratum (Plot size: 30 ft)				
1.				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL 0 x 1 = 0 FACW 1 x 2 = 2 FAC 4 x 3 = 12 FACU 8 x 4 = 32 UPL 0 x 5 = 0 Sum: 13 (A) 46 (B) Prevalence Index = B/A = 3.35
2.				
3.				
4.				
5.				
6.				
7.				
8.				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. Pinus strobus	10.5	X	FACU	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. Quercus rubra	10.5	X	FACU	
3. Frangula alnus	10.5	X	FAC	
4. Betula populifolia	10.5	X	FAC	
5. Hamamelis virginiana	10.5	X	FACU	
6. Quercus alba	3		FACU	
7.				
8.				
	55	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. Pyrola americana	63	X	FAC	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. Juniperus communis	10.5		FACU	
3. Rubus hispidus	10.5		FACW	
4. Sassafras albidum	10.5		FACU	
5. Solidago canadensis	10.5		FACU	
6. Hamamelis virginiana	3		FACU	
7.				
8.				
9.				
10.				
11.				
12.				
	108	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1.				Hydrophytic Vegetation Present? No
2.				
3.				
4.				
5.				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B20 wetland

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B20 wetland
 Investigator(s): Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): <1%
 Subregion (LRR or MLRA): _____ Lat: 42.51798 Long: -71.79733 Datum: _____
 Soil Map Unit: _____ NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology - naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present? _____	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Profile moist but not saturated as evidenced by lack of glistening ped faces and absence of an existing water table.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
8	10YR_2/1	100		N/A	N/A	FINE_SANDY_LOAM	Ap
15	7.5YR_3/1	100		N/A	N/A	FINE_SANDY_LOAM	A

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____		<u>Yes</u>	
Depth (inches): _____			
Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: B20 wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 5 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 3 x 2 = 6
4. _____				FAC 3 x 3 = 9
5. _____				FACU 2 x 4 = 8
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 8 (A) 23 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 3.01
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Vaccinium corymbosum</i>	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Frangula alnus</i>	20.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Viburnum dentatum</i>	10.5		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Pinus strobus</i>	10.5		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. <i>Hamamelis virginiana</i>	3		FACU	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	82	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus hispidus</i>	20.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Frangula alnus</i>	10.5	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	41	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B19 upland

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B19 upland
 Investigator(s): Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): _____ Lat: 42.51261 Long: -71.79298 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: ROW roadway
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: Same

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	

Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Cobble</u> Depth (inches): _____		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B19 upland

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.	_____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)	
2.	_____	_____	_____	_____		
3.	_____	_____	_____	_____		
4.	_____	_____	_____	_____		
5.	_____	_____	_____	_____		
6.	_____	_____	_____	_____		
7.	_____	_____	_____	_____		
8.	_____	_____	_____	_____		
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL <u>0.0</u> x 1 = <u>0.0</u> FACW <u>3.0</u> x 2 = <u>6.0</u> FAC <u>10.5</u> x 3 = <u>31.5</u> FACU <u>0.0</u> x 4 = <u>0.0</u> UPL <u>0.0</u> x 5 = <u>0.0</u> Sum: <u>13.5</u> (A) <u>37.5</u> (B) Prevalence Index = B/A = <u>2.78</u>	
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>	
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			
		<u>0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B18 (upland plot)

Project Site: A1/B2 Line City/County: Leominster / Worcester Samp. Date: 6/9/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland B18 (upland plot)
 Investigator(s): Jay Quattrocchi and Nicole Martin Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Other Slope Slope (%): 5-8%
 Subregion (LRR or MLRA): LRR Lat: 42.50699 Long: -71.78709 Datum: NAD 83
 Soil Map Unit: Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? <u> </u> Depth (inches): <u>N/A</u> Water Table Present? <u> </u> Depth (inches): <u>N/A</u> Saturation Present? <u> </u> Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_2/1	100		N/A	N/A	N/A		Organics
1-4	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
4-6	10YR_3/6	100		N/A	N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>6</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B18 (upland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 0 x 1 = 0
3. _____				FACW 0 x 2 = 0
4. _____				FAC 1 x 3 = 3
5. _____				FACU 5 x 4 = 20
6. _____				UPL 1 x 5 = 5
7. _____				Sum: 7 (A) 28 (B)
8. _____				
	0	= Total Cover		Prevalence Index = B/A = 3.34
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	38	X	FACU	Dominance Test is > 50%
2. <i>Hamamelis virginiana</i>	38	X	FACU	Prevalence Index is <= 3.0
3. <i>Sassafras albidum</i>	10.5		FACU	Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Acer rubrum</i>	3		FAC	Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				
7. _____				
8. _____				
	89	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Dennstaedtia punctilobula</i>	10.5	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Carya glabra</i>	3		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Parthenocissus quinquefolia</i>	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	16	= Total Cover		Hydrophytic Vegetation Present? No
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Remarks:
1. _____				(If observed, list morphological adaptations below). No hydrophytic vegetation indicators present; parameter is not met.
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B18 (wetland plot)

Project Site: A1/B2 Line City/County: Leominster / Worcester Smp. Date: 6/9/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland B18 (wetland plot)
 Investigator(s): Jay Quattrocchi and Nicole Martin Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.50690 Long: -71.78690 Datum: NAD 83
 Soil Map Unit: Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks:
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks:
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? <u>X</u> Depth (inches): <u>Surface</u> Water Table Present? <u>X</u> Depth (inches): <u>Surface</u> Saturation Present? <u>X</u> Depth (inches): <u>Surface</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR_2/1	100		N/A	N/A	N/A		Organics
1-8	10YR_2/1	100		N/A	N/A	N/A	FINE_SANDY_LOAM	
>8	10YR_2/1	95	10YR_6/1	5	D	M	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input checked="" type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? <u>Yes</u>
Remarks:	

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B18 (wetland)

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 3 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 5 x 2 = 10
3. _____				FAC 2 x 3 = 6
4. _____				FACU 1 x 4 = 4
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 8 (A) 20 (B)
7. _____				Prevalence Index = B/A = 2.18
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Alnus incana</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Acer rubrum</i>	3		FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Kalmia latifolia</i>	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Lyonia ligustrina</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	29	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Osmundastrum cinnamomeum</i>	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago rugosa</i>	3		FAC	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Rubus hispidus</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	37	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Other



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B17 upland

Project Site: A1/B2 City/County: Leominster / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B17 upland
 Investigator(s): Jay Quattrocchi Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Undulating Slope (%): 3-5%
 Subregion (LRR or MLRA): _____ Lat: 42.50247 Long: -71.78352 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Path mowed through data plot areas
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
6	10YR_3/3	70	10YR_4/6	30	N/A	M	FINE_SANDY_LOAM

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Cobble/rock</u>		<u>No</u>	
Depth (inches): <u>6</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: B17 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 7 (A)
2. _____				# Dominants across all strata: 10 (B)
3. _____				% Dominants OBL, FACW, FAC: 70.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Acer rubrum	3	X	FAC	Total % Cover of: OBL 0.0 x 1 = 0.0
2. Pinus strobus	3	X	FACU	FACW 6.0 x 2 = 12.0
3. _____				FAC 37.5 x 3 = 112.5
4. _____				FACU 6.0 x 4 = 24.0
5. _____				UPL 3.0 x 5 = 15.0
6. _____				Sum: 52.5 (A) 163.5 (B)
7. _____				Prevalence Index = B/A = 3.11
8. _____				
	6	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Acer rubrum	10.5	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Frangula alnus	10.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Pinus strobus	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Solidago rugosa	10.5	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus hispidus	3	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Parthenocissus_SP	3	X	NULL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Dennstaedia punctilobula	3	X	UPL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Acer rubrum	3	X	FAC	Woody vine - All woody vines, regardless of height.
6. Dichanthelium clandestinum	3	X	FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	25	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland b17

Project Site: A1/B2 City/County: Leominster / Worcester Samp. Date: 8/18/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wetland b17
 Investigator(s): Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Undulating Slope (%): <1%
 Subregion (LRR or MLRA): _____ Lat: 42.50258 Long: -71.78350 Datum: _____
 Soil Map Unit: _____ NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Profile moist but not saturated as evidenced by lack of glistening ped faces and absence of an existing water table.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
2	10YR_2/2	100		N/A	N/A	N/A	PEAT	
12	10YR_3/2	85	10YR_5/3	10	N/A	M	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Cobble</u>		<u>Yes</u>	
Depth (inches): <u>12</u>			
Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland b17

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>66.67%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>0</u> x 1 = <u>0</u>
2. _____				FACW <u>1</u> x 2 = <u>2</u>
3. _____				FAC <u>2</u> x 3 = <u>6</u>
4. _____				FACU <u>1</u> x 4 = <u>4</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>4</u> (A) <u>12</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>2.91</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. Frangula alnus	63	X	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Acer rubrum	10.5		FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>73</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Rubus hispidus	10.5	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Maianthemum canadense	3	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>13</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B16 upland

Project Site: A1/B2 City/County: Leominster / Worcester Samp. Date: 8/12/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B16 upland
 Investigator(s): Jay Quattrocchi Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): _____ Lat: 42.49991 Long: -71.78189 Datum: _____
 Soil Map Unit: _____ NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Mowed
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
Restrictive Layer (if observed): Type: <u>Cobble, rock</u> Depth (inches): <u>5</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: B16 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 1 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 0 x 2 = 0
3. _____				FAC 0 x 3 = 0
4. _____				FACU 1 x 4 = 4
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 1 (A) 4 (B)
7. _____				Prevalence Index = B/A = 2.11
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Lolium_SP	85.5	X	NULL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. Trifolium hybridum	10.5		FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	96	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B16

Project Site: A1/B2 City/County: Leominster / Worcester Samp. Date: 8/12/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B16
 Investigator(s): Jay Quattrocchi Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): _____ Lat: 42.49992 Long: -71.78173 Datum: _____
 Soil Map Unit: _____ NWI Class: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: A swath has been mowed through the wetland
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>	Wetland Hydrology Present?	<u>Yes</u>
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Saturation Present?	<u>X</u>	Depth (inches):	<u>1</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
 Wetland is essentially an overflow area for the Fall Brook Reservoir.

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: Rock, cobble
 Depth (inches): 11

Hydric Soil Present? Yes

Remarks:
 Soil samples reflect soil disturbance associated with past land use.

VEGETATION - Use scientific names of plants.



Sampling Point: B16

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL <u>3</u> x 1 = <u>3</u>
2. _____				FACW <u>4</u> x 2 = <u>8</u>
3. _____				FAC <u>0</u> x 3 = <u>0</u>
4. _____				FACU <u>0</u> x 4 = <u>0</u>
5. _____				UPL <u>0</u> x 5 = <u>0</u>
6. _____				Sum: <u>7</u> (A) <u>11</u> (B)
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index = B/A = <u>1.91</u>
Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Phalaris arundinacea	63	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Onoclea sensibilis	20.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Carex hystericina	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Lythrum salicaria	3		OBL	Woody vine - All woody vines, regardless of height.
5. Juncus effusus	3		OBL	
6. Spiraea alba	3		FACW	
7. Thelypteris palustris	3		FACW	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>98</u>	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B16 up

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B16 Upland
 Investigator(s): Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Other Edge of reservoir Local relief (concave, convex, none): _____ Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.49958 Long: -71.78132 Datum: _____
 Soil Map Unit: Paxton fine sandy loam, 3 to 8 percent slopes NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
3	7.5YR_3/3	100		N/A	N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Rock/cobble</u> Depth (inches): <u>3</u>		Hydric Soil Present? <u>No</u>	
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: B16 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 3.0 x 1 = 3.0
3. _____				FACW 3.0 x 2 = 6.0
4. _____				FAC 6.0 x 3 = 18.0
5. _____				FACU 51.5 x 4 = 206.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 63.5 (A) 233.0 (B)
8. _____				Prevalence Index = B/A = 3.67
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				Dominance Test is > 50%
2. _____				Prevalence Index is <= 3.0
3. _____				Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				Rapid Test for Hydrophytic Vegetation
5. _____				Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Solidago canadensis	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Holcus lanatus	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Symphoricarpos orbiculatus	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Solidago rugosa	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Spiraea alba	3		FACW	Woody vine - All woody vines, regardless of height.
6. Juncus effusus	3		OBL	
7. Populus deltoides	3		FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	63	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				No
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

B16 wet

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B16 wet
 Investigator(s): Jay Quattrocchi Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Other Edge of reservoir Local relief (concave, convex, none): _____ Slope (%): 1-2%
 Subregion (LRR or MLRA): _____ Lat: 42.49959 Long: -71.78147 Datum: _____
 Soil Map Unit: _____ NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Remarks: _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>Yes</u>	
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>Yes</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Edge of reservoir - surface water noted in prior years	
Remarks: Other	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
Restrictive Layer (if observed): Type: <u>Rock/gravel</u> Depth (inches): <u>2</u>	Hydric Soil Present? <u>No</u>
Remarks: Other	

VEGETATION - Use scientific names of plants.



Sampling Point: B16 wet

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 6 (A)
2. _____				# Dominants across all strata: 7 (B)
3. _____				% Dominants OBL, FACW, FAC: 85.71% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 3.0 x 1 = 3.0
3. _____				FACW 55.0 x 2 = 110.0
4. _____				FAC 24.0 x 3 = 72.0
5. _____				FACU 23.5 x 4 = 94.0
6. _____				UPL 0.0 x 5 = 0.0
7. _____				Sum: 105.5 (A) 279.0 (B)
8. _____				Prevalence Index = B/A = 2.64
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Cornus alba</i>	10.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. <i>Populus deltoides</i>	10.5	X	FAC	<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. <i>Viburnum dentatum</i>	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	24	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Onoclea sensibilis</i>	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Solidago canadensis</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Cornus alba</i>	10.5	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Eutrochium purpureum</i>	10.5	X	FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. <i>Spiraea alba</i>	10.5	X	FACW	Woody vine - All woody vines, regardless of height.
6. <i>Dichanthelium clandestinum</i>	3		FACW	
7. <i>Juncus effusus</i>	3		OBL	
8. <i>Rosa multiflora</i>	3		FACU	
9. <i>Vicia_SP</i>	3		NULL	
10. _____				
11. _____				
12. _____				
	84	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.

Restrictive layer does not allow for proper assessment of soils



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W20

B15 upland

Project Site: A1/B2 City/County: Leominster / Worcester Samp. Date: 8/14/2020
 Applicant/Owner: National Grid State: MA Sampling Point: B15 upland
 Investigator(s): Jay Quattrocchi Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Other Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): _____ Lat: 42.49818 Long: -71.77991 Datum: _____
 Soil Map Unit: _____ NWI Class: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Plot in mowed field
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
3	10YR_3/3	100		N/A	N/A	N/A	PEAT	Organic moderately decomposed
3-10	10YR_3/3	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Ap

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed): Type: <u>Rock/cobble</u> Depth (inches): <u>10</u>	Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>	

VEGETATION - Use scientific names of plants.



Sampling Point: B15 upland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 1 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 1 x 2 = 2
3. _____				FAC 0 x 3 = 0
4. _____				FACU 1 x 4 = 4
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 2 (A) 6 (B)
7. _____				Prevalence Index = B/A = 2.68
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Setaria_SP</i>	63	X	NULL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Trifolium pratense</i>	20.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Carex X_SP</i>	20.5		NULL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Cyperus esculentus</i>	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	107	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W20

B15 wetland

Project Site: A1/B2 City/County: Leominster / Worcester Samp. Date: 8/14/2020
Applicant/Owner: National Grid State: MA Sampling Point: B15 wetland
Investigator(s): Jay Quattrocchi Section, Township, Range:
Landform (hillslope, terrace, etc.): Other Accent to Fall Brook reservoir, near toe Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): Lat: 42.49814 Long: -71.78012 Datum:
Soil Map Unit: NWI Class: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? - If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology Yes significantly disturbed? Remarks: Portion of plot area has been mowed
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:
Water from the reservoir appears to deep out into the

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) X Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) X Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Other

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows show data for depths 3 and 3-11 inches.

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) X Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes

Remarks:
Indicator F7 (Depleted Dark Surface) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: B15 wetland

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL 3 x 1 = 3
3. _____				FACW 2 x 2 = 4
4. _____				FAC 1 x 3 = 3
5. _____				FACU 3 x 4 = 12
6. _____				UPL 0 x 5 = 0
7. _____				Sum: 9 (A) 22 (B)
8. _____				Prevalence Index = B/A = 2.37
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. _____				<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	0	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Onoclea sensibilis	20.5	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Juncus effusus	20.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Rosa multiflora	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Trifolium pratense	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. Ranunculus repens	3		FAC	Woody vine - All woody vines, regardless of height.
6. Carex vulpinoidea	3		OBL	
7. Carex hystericina	3		OBL	
8. Impatiens capensis	3		FACW	
9. _____				
10. _____				
11. _____				
12. _____				
	59	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. Vitis aestivalis	20.5		FACU	Yes
2. _____				
3. _____				
4. _____				
5. _____				
	20	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W21

Up plot wetland B14

Project Site: A1/B2 City/County: Leominster / Worcester Samp. Date: 5/29/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Up plot wetland B14
 Investigator(s): JQ and EM Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Other Gentle slope Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR Lat: 42.49657 Long: -71.77777 Datum: GCS WGS 1984
 Soil Map Unit: Woodbridge fine sandy loam NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-11	7.5YR_2.5/3	100		N/A	N/A	N/A	FINE_SANDY_LOAM	Not saturated
11+	10YR_4/4	100		N/A	N/A	N/A	FINE_SANDY_LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: _____	Depth (inches): _____	<u>No</u>	
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: Up plot wetland B14

	Absolute % Cover	Dom. Sp?	Indicator Status																																	
Tree Stratum (Plot size: 30 ft)																																				
1. <i>Rhus typhina</i>	3	X	UPL	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>6</u> (B) % Dominants OBL, FACW, FAC: <u>50.00%</u> (A/B)																																
2. <i>Alnus incana</i>	3	X	FACW																																	
3.																																				
4.																																				
5.																																				
6.																																				
7.																																				
8.																																				
	6	= Total Cover																																		
Sapling Stratum (Plot size: 30 ft)																																				
1.																																				
2.																																				
3.																																				
4.																																				
5.																																				
6.																																				
7.																																				
8.																																				
	0	= Total Cover																																		
Shrub Stratum (Plot size: 15 ft)																																				
1. <i>Alnus incana</i>	3	X	FACW	Prevalence Index Worksheet: <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Total % Cover of:</th> <th colspan="2">Multiply By:</th> </tr> </thead> <tbody> <tr> <td>OBL</td><td style="text-align:center;">0.0</td> <td>x 1 =</td> <td style="text-align:center;">0.0</td> </tr> <tr> <td>FACW</td><td style="text-align:center;">16.5</td> <td>x 2 =</td> <td style="text-align:center;">33.0</td> </tr> <tr> <td>FAC</td><td style="text-align:center;">0.0</td> <td>x 3 =</td> <td style="text-align:center;">0.0</td> </tr> <tr> <td>FACU</td><td style="text-align:center;">33.0</td> <td>x 4 =</td> <td style="text-align:center;">132.0</td> </tr> <tr> <td>UPL</td><td style="text-align:center;">6.0</td> <td>x 5 =</td> <td style="text-align:center;">30.0</td> </tr> <tr> <td>Sum:</td><td style="text-align:center;">55.5 (A)</td> <td></td> <td style="text-align:center;">195.0 (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A =</td> <td></td> <td style="text-align:center;">3.51</td> </tr> </tbody> </table> Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>	Total % Cover of:		Multiply By:		OBL	0.0	x 1 =	0.0	FACW	16.5	x 2 =	33.0	FAC	0.0	x 3 =	0.0	FACU	33.0	x 4 =	132.0	UPL	6.0	x 5 =	30.0	Sum:	55.5 (A)		195.0 (B)	Prevalence Index = B/A =			3.51
Total % Cover of:		Multiply By:																																		
OBL	0.0	x 1 =	0.0																																	
FACW	16.5	x 2 =	33.0																																	
FAC	0.0	x 3 =	0.0																																	
FACU	33.0	x 4 =	132.0																																	
UPL	6.0	x 5 =	30.0																																	
Sum:	55.5 (A)		195.0 (B)																																	
Prevalence Index = B/A =			3.51																																	
2.																																				
3.																																				
4.																																				
5.																																				
6.																																				
7.																																				
8.																																				
	3	= Total Cover																																		
Herb Stratum (Plot size: 5 ft)																																				
1. <i>Impatiens capensis</i>	10.5	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.																																
2. <i>Rubus flagellaris</i>	10.5	X	FACU																																	
3. <i>Solidago canadensis</i>	10.5	X	FACU																																	
4. <i>Parthenocissus quinquefolia</i>	3		FACU																																	
5. <i>Taraxacum officinale</i>	3		FACU																																	
6. <i>Asclepias syriaca</i>	3		UPL																																	
7. <i>Anthoxanthum odoratum</i>	3		FACU																																	
8. <i>Alliaria petiolata</i>	3		FACU																																	
9. <i>Galium_SP</i>	3		NULL																																	
10.																																				
11.																																				
12.																																				
	49	= Total Cover																																		
Woody Vines (Plot size: 30 ft)																																				
1.																																				
2.																																				
3.																																				
4.																																				
5.																																				
	0	= Total Cover																																		
				Hydrophytic Vegetation Present? <u>No</u>																																

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland B14 wet plot

Project Site: A1/B2 City/County: Leominster / Worcester Samp. Date: 5/29/2020
Applicant/Owner: National Grid State: MA Sampling Point: Wetland B14 wet plot
Investigator(s): J. Quattrocchi and E. Martin Section, Township, Range: Leominster
Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 1-2%

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks:

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) X Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-10 10YR_3/1 100 N/A N/A N/A FINE_SANDY_LOAM Refusal at 10"
Hydric Soil Indicators: Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Sandy Mucky Mineral (S1) Loamy Mucky Mineral (F1) (LRR K, L)
Sandy Gleyed Matrix (S4) Loamy Gleyed Matrix (F2)
Dark Surface (S7) (LRR R, MLRA 149B) Depleted Matrix (F3)
Indicators for Problematic Hydric Soils3: 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland B14 wet plot

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <i>Alnus incana</i>	20.5	X	FACW	
2. <i>Rhus typhina</i>	10.5	X	UPL	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	31	= Total Cover		
Sapling Stratum (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <i>Cornus amomum</i>	20.5	X	FACW	
2. <i>Alnus incana</i>	10.5	X	FACW	
3. <i>Viburnum dentatum</i>	10.5	X	FAC	
4. <i>Acer rubrum</i>	3		FAC	
5. _____				
6. _____				
7. _____				
8. _____				
	44	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <i>Onoclea sensibilis</i>	38	X	FACW	
2. <i>Impatiens capensis</i>	10.5		FACW	
3. <i>Solidago rugosa</i>	10.5		FAC	
4. <i>Cornus amomum</i>	10.5		FACW	
5. <i>Lobelia cardinalis</i>	3		OBL	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	72	= Total Cover		
Woody Vines (Plot size: <u>30 ft</u>)				
1. <i>Vitis labrusca</i>	20.5		FACU	
2. _____				
3. _____				
4. _____				
5. _____				
	20	= Total Cover		

Dominance Test Worksheet:	
# Dominants OBL, FACW, FAC:	<u>5</u> (A)
# Dominants across all strata:	<u>7</u> (B)
% Dominants OBL, FACW, FAC:	<u>71.43%</u> (A/B)
Prevalence Index Worksheet:	
Total % Cover of:	Multiply By:
OBL <u>1</u> x 1 =	<u>1</u>
FACW <u>6</u> x 2 =	<u>12</u>
FAC <u>3</u> x 3 =	<u>9</u>
FACU <u>1</u> x 4 =	<u>4</u>
UPL <u>1</u> x 5 =	<u>5</u>
Sum: <u>12</u> (A)	<u>31</u> (B)
Prevalence Index = B/A =	<u>2.55</u>
Hydrophytic Vegetation Indicators:	
<input checked="" type="checkbox"/> Dominance Test is > 50%	
<input checked="" type="checkbox"/> Prevalence Index is <= 3.0	
<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)	
<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation	
<input type="checkbox"/> Morphological Adaptations	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Definitions of Vegetation Strata:	
Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
Woody vine - All woody vines, regardless of height.	
Hydrophytic Vegetation Present?	<u>Yes</u>

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W23

C-12/C-13-UPL

Project Site: A1B2 City/County: Leominster / Worcester State: MA Sampling Point: C-12/C-13-UPL
Applicant/Owner: National Grid
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.49492 Long: -71.77531 Datum: WGS 1984
Soil Map Unit: Paxton fine sandy loam NWI Class: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: All three parameters are not met. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Table with 9 columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks. Row 1: 0-5, 10YR_4/3, 100, N/A, N/A, N/A, LOAM, Gravel refusal at 5 inches

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 5
Hydric Soil Present? No

Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-12/C-13-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 25.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Sambucus nigra</i>	10.5	X	FACW	_____ Dominance Test is > 50%
2. <i>Salix discolor</i>	3		FACW	_____ Prevalence Index is <= 3.0
3. <i>Populus deltoides</i>	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	16	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Solidago altissima</i>	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Lactuca canadensis</i>	10.5		FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Daucus carota</i>	3		UPL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	76	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. <i>Vitis aestivalis</i>	3		FACU	
2. <i>Celastrus orbiculatus</i>	3		UPL	
3. _____				
4. _____				
5. _____				
	6	= Total Cover		

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W23

C-13-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-13-WET
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.49467 Long: -71.77479 Datum: WGS 1984
Soil Map Unit: Ridgebury fine sandy loam NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-5 10YR_2/1 100 N/A N/A N/A MUCK Rock refusal at 5 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histc Epipedon (A2)
Black Histc (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Rock
Depth (inches): 5
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-13-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>6</u> (A) # Dominants across all strata: <u>8</u> (B) % Dominants OBL, FACW, FAC: <u>75.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
				Prevalence Index Worksheet: Total % Cover of: <u>0</u> = Total Cover Multiply By:
				OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Salix discolor</i>	10.5	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. <i>Alnus incana</i>	10.5	X	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Salix discolor</i>	38	X	FACW	Hydrophytic Vegetation Present? <u>Yes</u>
2. <i>Viburnum dentatum</i>	38	X	FAC	
3. <i>Sambucus nigra</i>	38	X	FACW	
4. <i>Lonicera morrowii</i>	3		FACU	
5. <i>Spiraea alba</i>	3		FACW	
6. _____				
7. _____				
8. _____				
				Hydrophytic Vegetation Present? <u>Yes</u>
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. <i>Solidago rugosa</i>	10.5	X	FAC	Hydrophytic Vegetation Present? <u>Yes</u>
2. <i>Daucus carota</i>	3		UPL	
3. <i>Celastrus orbiculatus</i>	3		UPL	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? <u>Yes</u>
2. _____				
3. _____				
4. _____				
5. _____				
				Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) is present with >50% of dominant species across all strata FAC or wetter. Parameter is met. Vine layer combined with herbaceous layer because total cover is <5%.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-12-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/30/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-12-WET
 Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.49475 Long: -71.77497 Datum: WGS 1984
 Soil Map Unit: Ridgebury fine sandy loam NWI Class: PSS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> X	<input type="checkbox"/>	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/>	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	<u> </u> Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	<u> </u> Depth (inches): <u>N/A</u>		
Saturation Present?	<input checked="" type="checkbox"/> X <u> </u> Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_2/1	100		N/A	N/A	N/A	MUCK	Rock refusal at 5 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> X	Histosol (A1)	<input type="checkbox"/>	2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/>	Stratified Layers (A5)	<input type="checkbox"/>	Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)	<input type="checkbox"/>	Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/>	Sandy Redox (S5)	<input type="checkbox"/>	Red Parent Material (F21)
<input type="checkbox"/>	Stripped Matrix (S6)	<input type="checkbox"/>	Very Shallow Dark Surface (TF12)
<input type="checkbox"/>	Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/>	Other (Explain in Remarks)
Restrictive Layer (if observed):		Hydric Soil Present?	
Type:	<u>Rock</u>	<u>Yes</u>	
Depth (inches):	<u>5</u>		
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C-12-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. Ilex verticillata	85.5	X	FACW	
2. Viburnum dentatum	10.5		FAC	
3. Sambucus nigra	10.5		FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>106</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. Onoclea sensibilis	38	X	FACW	
2. Solidago rugosa	10.5		FAC	
3. Phalaris arundinacea	10.5		FACW	
4. Doellingeria umbellata	3		FACW	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>62</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Hydrophytic Vegetation Indicators:

Dominance Test is > 50%

Prevalence Index is <= 3.0

Problematic Hydrophytic Vegetation¹ (explain)

Rapid Test for Hydrophytic Vegetation

Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) is present; parameter is met. Dominance test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W24

C-10-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-10-UPL
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 8-12%
Subregion (LRR or MLRA): LRR R Lat: 42.48916 Long: -71.76872 Datum: WGS 1984
Soil Map Unit: Whitman fine sandy loam NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-18 10YR_5/8 100 N/A N/A N/A SANDY_LOAM
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks:
No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-10-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Kalmia latifolia</i>	20.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Lyonia ligustrina</i>	3		FACW	_____ Prevalence Index is <= 3.0
3. <i>Betula populifolia</i>	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Quercus rubra</i>	3		FACU	_____ Rapid Test for Hydrophytic Vegetation
5. <i>Pinus strobus</i>	3		FACU	_____ Morphological Adaptations
6. <i>Spiraea alba</i>	3		FACW	
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____				
	35	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Andropogon virginicus</i>	10.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago altissima</i>	10.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	31	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W24

C-10-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-10-WET
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.48926 Long: -71.76891 Datum: WGS 1984
Soil Map Unit: Paxton fine sandy loam NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
X Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-18 10YR_2/1 100 N/A N/A N/A MUCK
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-10-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 66.67% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of: Multiply By:
1. <i>Alnus incana</i>	38	X	FACW	OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
38 = Total Cover				Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Alnus incana</i>	85.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Spiraea alba</i>	3		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
88 = Total Cover				Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Solidago canadensis</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Carex crinita</i>	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Typha latifolia</i>	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
44 = Total Cover				Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).

Indicator 2 (Dominance Test) is present with >50% of dominant species across all strata FAC or wetter; parameter is met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W25

C-11-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-11-UPL
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.48834 Long: -71.76723 Datum: WGS 1984
Soil Map Unit: Merrimac fine sandy loam, 15 to 25 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Transmission ROW, compaction from construction.
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
(in) Color (moist) % Color (moist) % Type1 Loc2
0-4 10YR_4/4 100 N/A N/A N/A GRAVELLY_SILT_LOAM Auger refusal at 4in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? No
Depth (inches): 4
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-11-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>1</u> (A)
2. _____				# Dominants across all strata: <u>3</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				_____ Dominance Test is > 50%
1. <i>Spiraea alba</i>	63	X	FACW	_____ Prevalence Index is <= 3.0
2. <i>Elaeagnus angustifolia</i>	10.5		FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Betula populifolia</i>	3		FAC	_____ Rapid Test for Hydrophytic Vegetation
4. <i>Populus deltoides</i>	3		FAC	_____ Morphological Adaptations
5. <i>Kalmia latifolia</i>	3		FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>82</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Solidago canadensis</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Schedonorus arundinaceus</i>	38	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Rubus flagellaris</i>	20.5		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. <i>Andropogon ternarius</i>	10.5		UPL	Woody vine - All woody vines, regardless of height.
5. <i>Achillea millefolium</i>	3		FACU	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>110</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W25

C-11-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-11-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.48835 Long: -71.76744 Datum: WGS 1984
Soil Map Unit: Merrimac fine sandy loam, 15 to 25 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Transmission ROW, compaction from construction
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_5/2 97 10YR_4/6 3 C M SANDY_LOAM Auger refusal at 4in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 4
Hydric Soil Present? Yes
Remarks: Depleted Matrix (F3) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-11-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 40.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Frangula alnus	10.5	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Betula cordifolia	10.5	X	FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Alnus incana	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. Populus deltoides	3		FAC	<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	47	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Symphyotrichum pilosum	10.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Solidago canadensis	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Juncus effusus	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Scirpus cyperinus	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	27	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				<input type="checkbox"/>
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-8/C-9-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/30/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-8/C-9-UPL
 Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.48799 Long: -71.76584 Datum: WGS 1984
 Soil Map Unit: Hinckley loamy sand NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? _____	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? _____	Depth (inches): <u>N/A</u>		
Saturation Present? _____	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR_5/6	100		N/A	N/A	N/A	LOAM	Gravel refusal at 10 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>		<u>No</u>	
Depth (inches): <u>10</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: C-8/C-9-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 3 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Juniperus communis</i>	20.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Elaeagnus umbellata</i>	3		UPL	_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	23	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Andropogon ternarius</i>	38	X	UPL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Lespedeza capitata</i>	10.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	48	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W27

C-9-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-9-WET
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.48785 Long: -71.76590 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
X Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
N/A N/A N/A N/A N/A N/A N/A N/A Auger refusal at surface; assume soils are hydric.
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Rock
Depth (inches): 0
Hydric Soil Present? Yes
Remarks: Auger refusal at surface; assume soils are hydric.

VEGETATION - Use scientific names of plants.



Sampling Point: C-9-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>5</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>80.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. <i>Salix nigra</i>	10.5	X	OBL	
2. <i>Alnus incana</i>	3	X	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>13</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)				
1. <i>Salix nigra</i>	85.5	X	OBL	
2. <i>Alnus incana</i>	3		FACW	
3. <i>Salix bebbiana</i>	3		FACW	
4. <i>Rosa multiflora</i>	3		FACU	
5. _____				
6. _____				
7. _____				
8. _____				
<u>94</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)				
1. <i>Glyceria canadensis</i>	3	X	OBL	
2. <i>Celastrus orbiculatus</i>	3	X	UPL	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>6</u> = Total Cover				
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.				
Hydrophytic Vegetation Present? <u>Yes</u>				

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) is present with >50% of dominant species across all strata FAC or wetter; parameter is met. Vine layer combined with herbaceous layer because total cover was <5%.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C8-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: C8-WET
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.48803 Long: -71.76575 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) X Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-5 10YR_3/2 97 10YR_3/6 3 C M LOAM Refusal at 5 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) X Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? Yes
Depth (inches): 5
Remarks: Redox Dark Surface (F6) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-8-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of: Multiply By:
1. <i>Betula populifolia</i>	3	X	FAC	OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
3 = Total Cover				Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. <i>Ilex verticillata</i>	38	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. <i>Alnus incana</i>	38	X	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. <i>Lyonia ligustrina</i>	3		FACW	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
79 = Total Cover				Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. <i>Rubus hispidus</i>	38	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. <i>Carex crinita</i>	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. <i>Solidago rugosa</i>	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
44 = Total Cover				Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).

Indicator 2 (Dominance Test) is present with >50% of dominant species across all strata FAC or wetter. Parameter is met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W28

C-7-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-7-UPL
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.48709 Long: -71.76428 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand, 3 to 8 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Powerline ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_4/3 100 N/A N/A N/A GRAVELLY_LOAM Refusal at 3 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 3
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-7-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC:	0 (A)
2. _____	_____	_____	_____	# Dominants across all strata:	3 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC:	0.00% (A/B)
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
			0 = Total Cover	Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:	Multiply By:
1. <i>Elaeagnus umbellata</i>	10.5	X	UPL	OBL _____ x 1 = _____	_____
2. _____	_____	_____	_____	FACW _____ x 2 = _____	_____
3. _____	_____	_____	_____	FAC _____ x 3 = _____	_____
4. _____	_____	_____	_____	FACU _____ x 4 = _____	_____
5. _____	_____	_____	_____	UPL _____ x 5 = _____	_____
6. _____	_____	_____	_____	Sum: _____ (A)	_____ (B)
7. _____	_____	_____	_____	Prevalence Index = B/A = _____	_____
8. _____	_____	_____	_____		
			10 = Total Cover	Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)				_____ Dominance Test is > 50%	
1. <i>Elaeagnus umbellata</i>	38	X	UPL	_____ Prevalence Index is <= 3.0	
2. <i>Frangula alnus</i>	3		FAC	_____ Problematic Hydrophytic Vegetation ¹ (explain)	
3. _____	_____	_____	_____	_____ Rapid Test for Hydrophytic Vegetation	
4. _____	_____	_____	_____	_____ Morphological Adaptations	
5. _____	_____	_____	_____	_____	
6. _____	_____	_____	_____	_____	
7. _____	_____	_____	_____	_____	
8. _____	_____	_____	_____	_____	
			41 = Total Cover	Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
1. <i>Solidago canadensis</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
2. <i>Rubus flagellaris</i>	10.5		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
3. <i>Andropogon ternarius</i>	3		UPL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
4. <i>Daucus carota</i>	3		UPL	Woody vine - All woody vines, regardless of height.	
5. <i>Celastrus orbiculatus</i>	3		UPL	Hydrophytic Vegetation Present? <u>No</u>	
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
			57 = Total Cover		
Woody Vines (Plot size: 30 ft)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
			_____ = Total Cover		

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met. Vine layer moved to herbaceous stratum because total cover is less than 5%.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W28

C-7-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/30/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-7-WET
Investigator(s): C. Cyrus and E. Martin Section, Township, Range: Leominster
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.48711 Long: -71.76422 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand NWI Class: PSS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
X High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? X Depth (inches): Surface
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-5 10YR_3/1 100 N/A N/A N/A MUCK Refusal at 5 inches
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histlic Epipedon (A2)
Black Histlic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 5
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-7-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Ilex verticillata	38	X	FACW	Total % Cover of: OBL _____ x 1 = _____
2. Alnus incana	10.5	X	FACW	FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
	48	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	38	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Salix nigra	10.5		OBL	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Alnus incana	10.5		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Spiraea alba	3		FACW	<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				
7. _____				
8. _____				
	62	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Phragmites australis	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. _____				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	63	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? <input type="checkbox"/> Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) is present; parameter is met. Dominance test is calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W29

C-6-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-6-UPL
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.48679 Long: -71.76377 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand, 8 to 15 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-18 10YR 5/4 80 10YR 6/2 20 D M SANDY LOAM Mixed matrix
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-6-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 20.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Elaeagnus angustifolia</i>	38	X	FACU	_____ Dominance Test is > 50%
2. <i>Rubus pensilvanicus</i>	10.5		FACU	_____ Prevalence Index is <= 3.0
3. <i>Juniperus communis</i>	10.5		FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				
7. _____				
8. _____				
	59	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Agrostis capillaris</i>	38	X	FAC	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Solidago canadensis</i>	20.5	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. <i>Andropogon virginicus</i>	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	82	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present?
1. <i>Celastrus orbiculatus</i>	20.5		UPL	_____ No
2. _____				
3. _____				
4. _____				
5. _____				
	20	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-6-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-6-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.48680 Long: -71.76353 Datum: WGS 1984
Soil Map Unit: Freetown muck, 0 to 1 percent slopes NWI Class: PFO
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): 6
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_2/1 100 N/A N/A N/A MUCK Auger refusal at 6in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histc Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Black Histc (A3) Loamy Mucky Mineral (F1) (LRR K, L)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)
Stratified Layers (A5) Depleted Matrix (F3)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6)
Thick Dark Surface (A12) Depleted Dark Surface (F7)
Sandy Mucky Mineral (S1) Redox Depressions (F8)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-6-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	# Dominants OBL, FACW, FAC: 5 (A)
2. _____	_____	_____	_____	# Dominants across all strata: 5 (B)
3. _____	_____	_____	_____	% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
0 = Total Cover				
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. Ilex verticillata	10.5	X	FACW	Total % Cover of: OBL _____ x 1 = _____
2. Alnus incana	3	X	FACW	FACW _____ x 2 = _____
3. _____	_____	_____	_____	FAC _____ x 3 = _____
4. _____	_____	_____	_____	FACU _____ x 4 = _____
5. _____	_____	_____	_____	UPL _____ x 5 = _____
6. _____	_____	_____	_____	Sum: _____ (A) _____ (B)
7. _____	_____	_____	_____	Prevalence Index = B/A = _____
8. _____	_____	_____	_____	
13 = Total Cover				
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Ilex verticillata	63	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. Alnus incana	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
3. Frangula alnus	3		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. Lonicera morrowii	3		FACU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. Lyonia ligustrina	3		FACW	<input type="checkbox"/> Morphological Adaptations
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
92 = Total Cover				
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Glyceria striata	63	X	OBL	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Calamagrostis canadensis	10.5		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Carex crinita	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Osmundastrum cinnamomeum	3		FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____	_____	_____	_____	Woody vine - All woody vines, regardless of height.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
79 = Total Cover				
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____	_____	_____	_____	<input type="checkbox"/>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W32

C-5C-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-5C-UPL
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.48580 Long: -71.76223 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand, 25 to 35 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Transmission ROW, compaction from construction
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR_4/4 100 N/A N/A N/A GRAVELLY_LOAM Auger refusal at 4in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils3:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? No
Depth (inches): 4
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-5C-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 25.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Rubus pensilvanicus	20.5	X	FACU	_____ Dominance Test is > 50%
2. Frangula alnus	20.5	X	FAC	_____ Prevalence Index is <= 3.0
3. Lonicera morrowii	10.5		FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. Pinus strobus	3		FACU	_____ Rapid Test for Hydrophytic Vegetation
5. Spiraea alba	3		FACW	_____ Morphological Adaptations
6. Elaeagnus angustifolia	3		FACU	
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____				
	60	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Solidago altissima	63	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Rubus flagellaris	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	83	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W32

C-5C-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-5C-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 8-12%
Subregion (LRR or MLRA): LRR R Lat: 42.48583 Long: -71.76238 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand, 25 to 35 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Transmission ROW, compaction from construction
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) X Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
X FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-5 10YR_4/2 97 10YR_4/6 3 C M LOAM Auger refusal at 5in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) X Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 5
Hydric Soil Present? Yes
Remarks: Depleted Matrix (F3) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-5C-WET

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>2</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Spiraea alba	63	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
	<u>63</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Verbena hastata	63	X	FACW	
2. Scirpus cyperinus	3		OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				
4. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
5. _____				
6. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>66</u>	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? <u>Yes</u>

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-5A-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-5A-UPL
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5-8%
Subregion (LRR or MLRA): LRR R Lat: 42.48622 Long: -71.76314 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand, 8 to 15 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9) Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13) Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15) Moss Trim Lines (B16)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8)
Drift Deposits (B3) Presence of Reduced Iron (C4) Saturation Visible on Aerial (C9)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Other (Explain in Remarks) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A Wetland Hydrology Present? No
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-3 10YR_4/3 100 N/A N/A N/A N/A LOAM Auger refusal at 3in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L) Dark Surface (S7) (LRR K, L, M)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel Hydric Soil Present? No
Depth (inches): 3
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-5A-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>33.33%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		
Shrub Stratum (Plot size: 15 ft)				
1. <i>Lonicera morrowii</i>	38	X	FACU	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Cornus florida</i>	3		FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>41</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <i>Solidago canadensis</i>	63	X	FACU	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2. <i>Pteridium aquilinum</i>	10.5		FACU	
3. <i>Juncus effusus</i>	0		OBL	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>73</u>	= Total Cover		
Woody Vines (Plot size: 30 ft)				
1. <i>Vitis riparia</i>	20.5		FAC	
2. <i>Celastrus orbiculatus</i>	3		UPL	
3. _____				
4. _____				
5. _____				
	<u>23</u>	= Total Cover		
				Hydrophytic Vegetation Present? <u>No</u>

Remarks: (If observed, list morphological adaptations below).
 No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-4-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-4-WET
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
Subregion (LRR or MLRA): LRR R Lat: 42.48624 Long: -71.76336 Datum: WGS 1984
Soil Map Unit: Hinckley loamy sand, 8 to 15 percent slopes NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes
Is This Sample Area Within a Wetland? Yes
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? X Depth (inches): Surface
Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-6 10YR_3/2 100 N/A N/A N/A MUCKY LOAM Auger refusal at 6in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histlic Epipedon (A2)
Black Histlic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6
Hydric Soil Present? Yes
Remarks:

VEGETATION - Use scientific names of plants.



Sampling Point: C-4-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>60.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum	(Plot size: 30 ft)				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		
Shrub Stratum	(Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1.	<i>Spiraea alba</i>	10.5	X	FACW	
2.	<i>Cornus amomum</i>	10.5	X	FACW	
3.	<i>Alnus incana</i>	3		FACW	
4.	<i>Frangula alnus</i>	3		FAC	
5.	<i>Viburnum dentatum</i>	3		FAC	
6.	<i>Rosa multiflora</i>	3		FACU	
7.					
8.					
		<u>33</u>	= Total Cover		
Herb Stratum	(Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	<i>Solidago canadensis</i>	38	X	FACU	
2.	<i>Carex crinita</i>	20.5	X	OBL	
3.	<i>Solidago canadensis</i>	20.5	X	FACU	
4.	<i>Typha latifolia</i>	10.5		OBL	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		<u>89</u>	= Total Cover		
Woody Vines	(Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>
1.					
2.					
3.					
4.					
5.					
		<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
 Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-5B-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-5B-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.48598 Long: -71.76303 Datum: WGS 1984
 Soil Map Unit: Hinckley loamy sand, 8 to 15 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Transmission ROW, compaction from construction
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_4/3	100		N/A	N/A	N/A	SILT_LOAM	Auger refusal at 5in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed): Type: <u>Bedrock</u> Depth (inches): <u>5</u>		Hydric Soil Present? <u>No</u>	
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

VEGETATION - Use scientific names of plants.



Sampling Point: C-5B-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 1 (A)
2. _____				# Dominants across all strata: 7 (B)
3. _____				% Dominants OBL, FACW, FAC: 14.29% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Lonicera morrowii</i>	10.5	X	FACU	_____ Dominance Test is > 50%
2. <i>Juniperus communis</i>	10.5	X	FACU	_____ Prevalence Index is <= 3.0
3. <i>Rubus pensilvanicus</i>	10.5	X	FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. <i>Frangula alnus</i>	10.5	X	FAC	_____ Rapid Test for Hydrophytic Vegetation
5. <i>Elaeagnus angustifolia</i>	3		FACU	_____ Morphological Adaptations
6. _____				
7. _____				
8. _____				
	45	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Solidago altissima</i>	20.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Rubus flagellaris</i>	20.5	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	41	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Woody vine - All woody vines, regardless of height.
1. <i>Celastrus orbiculatus</i>	10.5		UPL	
2. _____				
3. _____				
4. _____				
5. _____				
	10	= Total Cover		
				Hydrophytic Vegetation Present? <u> No </u>

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-5B-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 11/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-5B-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.48595 Long: -71.76296 Datum: WGS 1984
 Soil Map Unit: Hinckley loamy sand, 8 to 15 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-5	10YR_4/2	97	10YR_4/6	3	C	M	GRAVELLY_SANDY_LOA M Auger refusal at 5in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>Yes</u>	
Depth (inches): <u>5</u>			
Remarks:			

VEGETATION - Use scientific names of plants.



Sampling Point: C-5B-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of: Multiply By:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
0 = Total Cover				Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Spiraea alba	20.5	X	FACW	<input type="checkbox"/> Prevalence Index is <= 3.0
2. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
20 = Total Cover				Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Glyceria canadensis	20.5	X	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Scirpus cyperinus	20.5	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Onoclea sensibilis	20.5	X	FACW	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Rumex obtusifolius	3		FAC	Woody vine - All woody vines, regardless of height.
5. Solidago altissima	3		FACU	
6. Dichanthelium clandestinum	3		FACW	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
70 = Total Cover				Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).
Indicator 1 (Rapid Test) is present; parameter is met. Dominance test calculated for reference purposes only.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-4-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-4-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.48203 Long: -71.75703 Datum: WGS 1984
 Soil Map Unit: Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission line ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>No</u>	Is This Sample Area Within a Wetland? <u>No</u>
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? _____ Depth (inches): <u>N/A</u> Water Table Present? _____ Depth (inches): <u>N/A</u> Saturation Present? _____ Depth (inches): <u>N/A</u>	Wetland Hydrology Present? <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>	

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_4/3	100		N/A	N/A	N/A	LOAM	Auger refusal at 5

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	Indicators for Problematic Hydric Soils ³ : <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed): Type: <u>Gravel</u> Depth (inches): <u>5</u>		Hydric Soil Present? <u>No</u>
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C-4-UPL

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: <u>0</u> (A)
2. _____				# Dominants across all strata: <u>2</u> (B)
3. _____				% Dominants OBL, FACW, FAC: <u>0.00%</u> (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>0</u>	= Total Cover		Prevalence Index Worksheet:
Sapling Stratum (Plot size: <u>30 ft</u>)				Total % Cover of:
1. _____				OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				
8. _____				Prevalence Index = B/A = _____
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <u>15 ft</u>)				_____ Dominance Test is > 50%
1. Juniperus communis	38	X	FACU	_____ Prevalence Index is <= 3.0
2. Kalmia latifolia	10.5		FACU	_____ Problematic Hydrophytic Vegetation ¹ (explain)
3. Frangula alnus	3		FAC	_____ Rapid Test for Hydrophytic Vegetation
4. Spiraea alba	3		FACW	_____ Morphological Adaptations
5. Quercus rubra	0		FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. Populus deltoides	0		FAC	
7. Betula alleghaniensis	0		FAC	
8. _____				
	<u>54</u>	= Total Cover		Definitions of Vegetation Strata:
Herb Stratum (Plot size: <u>5 ft</u>)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Andropogon virginicus	63	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Pteridium aquilinum	3		FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Solidago caesia	3		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. Euthamia graminifolia	3		FAC	Woody vine - All woody vines, regardless of height.
5. Solidago rugosa	3		FAC	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>75</u>	= Total Cover		Hydrophytic Vegetation Present? <u>No</u>
Woody Vines (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-4-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-4-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.48210 Long: -71.75686 Datum: WGS 1984
 Soil Map Unit: Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/1	100		N/A	N/A	N/A	MUCK	Auger refusal at 3 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Bedrock</u>		<u>Yes</u>	
Depth (inches): <u>3</u>			
Remarks:			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C-4-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 4 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
0 = Total Cover				Prevalence Index Worksheet:
Sapling Stratum (Plot size: 30 ft)				Total % Cover of:
1. Ilex verticillata	10.5	X	FACW	OBL _____ x 1 = _____
2. _____				FACW _____ x 2 = _____
3. _____				FAC _____ x 3 = _____
4. _____				FACU _____ x 4 = _____
5. _____				UPL _____ x 5 = _____
6. _____				Sum: _____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____
8. _____				
10 = Total Cover				Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 ft)				<input checked="" type="checkbox"/> Dominance Test is > 50%
1. Frangula alnus	38	X	FAC	<input type="checkbox"/> Prevalence Index is <= 3.0
2. Kalmia latifolia	3		FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
3. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
4. _____				<input type="checkbox"/> Morphological Adaptations
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____				
7. _____				
8. _____				
41 = Total Cover				Definitions of Vegetation Strata:
Herb Stratum (Plot size: 5 ft)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Frangula alnus	38	X	FAC	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
2. Calamagrostis canadensis	38	X	OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Carex crinita	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. _____				Woody vine - All woody vines, regardless of height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
79 = Total Cover				Hydrophytic Vegetation Present? Yes
Woody Vines (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				

Remarks: (If observed, list morphological adaptations below).
Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland LE-W34

C-3-UPL

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-3-UPL
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.48062 Long: -71.75345 Datum: WGS 1984
 Soil Map Unit: Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission Line ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>No</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>No</u>		
Wetland Hydrology Present?	<u>No</u>		
Remarks: <u>One or more parameters lacking. Area is not a jurisdictional wetland.</u>			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? <u> </u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present?	<u>No</u>
Water Table Present? <u> </u>	Depth (inches): <u>N/A</u>		
Saturation Present? <u> </u>	Depth (inches): <u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: <u>No primary or secondary indicators of wetland hydrology present; parameter is not met.</u>			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	7.5YR_3/3	100		N/A	N/A	N/A	LOAM	Anger refusal at 5 in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):			
Type: <u>Gravel</u>		Hydric Soil Present?	<u>No</u>
Depth (inches): <u>5</u>			
Remarks: <u>No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.</u>			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: C-3-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 5 (B)
3. _____				% Dominants OBL, FACW, FAC: 40.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. Frangula alnus	10.5	X	FAC	_____ Dominance Test is > 50%
2. Rhus aromatica	10.5	X	UPL	_____ Prevalence Index is <= 3.0
3. Sambucus nigra	3		FACW	_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				
7. _____				
8. _____				
	24	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. Solidago altissima	85.5	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Phalaris arundinacea	10.5		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. Rubus hispidus	10.5		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. Euthamia graminifolia	3		FAC	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	109	= Total Cover		Woody vine - All woody vines, regardless of height.
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. Celastrus orbiculatus	3		UPL	
2. Vitis riparia	3		FAC	
3. _____				
4. _____				
5. _____				
	6	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-3-WET

Project Site: A1B2 City/County: Leominster / Worcester Samp. Date: 10/29/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-3-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Concave Slope (%): 3-5%
 Subregion (LRR or MLRA): LRR R Lat: 42.48078 Long: -71.75373 Datum: WGS 1984
 Soil Map Unit: Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes _____ If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Transmission line ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks: All parameters are met. Area is classified as a palustrine emergent (PEM) wetland.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches): <u>N/A</u>	<u>Yes</u>	
Water Table Present?	Depth (inches): <u>N/A</u>		
Saturation Present?	Depth (inches): <u>Surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Rutting throughout wetland from vehicles.			
Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR_4/1	90	10YR_3/6	10	C	M,PL	LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	
Restrictive Layer (if observed):		Hydric Soil Present?	
Type: <u>Gravel</u>	Depth (inches): <u>18</u>	<u>Yes</u>	
Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.			

VEGETATION - Use scientific names of plants.



Sampling Point: C-2-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1. _____				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100.00%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: 30 ft)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1. <i>Lyonia ligustrina</i>	10.5	X	FACW	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>10</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. <i>Verbena hastata</i>	63	X	FACW	
2. <i>Glyceria striata</i>	38	X	OBL	
3. <i>Symphytichum novae-angliae</i>	10.5		FACW	
4. <i>Onoclea sensibilis</i>	10.5		FACW	
5. <i>Epilobium ciliatum</i>	3		FACW	
6. <i>Solidago rugosa</i>	3		FAC	
7. <i>Rumex crispus</i>	3		FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
<u>131</u> = Total Cover				
Woody Vines (Plot size: 30 ft)				Hydrophytic Vegetation Present? <u>Yes</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				

Remarks: (If observed, list morphological adaptations below).
 Indicator 1 (Rapid Test) present; parameter is met. Dominance test is calculated for reference purposes only.

Sterling, Massachusetts Forms



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland ST-W1

C-2-UPL

Project Site: A1B2 City/County: Sterling / Worcester Samp. Date: 11/3/2020
Applicant/Owner: National Grid State: MA Sampling Point: C-2-UPL
Investigator(s): C. Cyrus Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 15-20%
Subregion (LRR or MLRA): LRR R Lat: 42.47693 Long: -71.74595 Datum: WGS 1984
Soil Map Unit: Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony NWI Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Normal Circumstances present? Yes If needed, explain any answers in Remarks:
Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Transmission ROW within active construction site
Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks:

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? No
Hydric Soil Present? No
Wetland Hydrology Present? No
Is This Sample Area Within a Wetland? No
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B15)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C5)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)
Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches): N/A
Water Table Present? Depth (inches): N/A
Saturation Present? Depth (inches): N/A
Wetland Hydrology Present? No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-5 10YR_4/2 100 N/A N/A N/A GRAVELLY_SILT_LOAM Auger refusal at 5in
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S7) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type: Gravel
Depth (inches): 5
Hydric Soil Present? No
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-2-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 0 (A)
2. _____				# Dominants across all strata: 4 (B)
3. _____				% Dominants OBL, FACW, FAC: 0.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: Multiply By:
2. _____				OBL _____ x 1 = _____
3. _____				FACW _____ x 2 = _____
4. _____				FAC _____ x 3 = _____
5. _____				FACU _____ x 4 = _____
6. _____				UPL _____ x 5 = _____
7. _____				Sum: _____ (A) _____ (B)
8. _____				Prevalence Index = B/A = _____
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Rosa multiflora</i>	20.5	X	FACU	_____ Dominance Test is > 50%
2. _____				_____ Prevalence Index is <= 3.0
3. _____				_____ Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				_____ Rapid Test for Hydrophytic Vegetation
5. _____				_____ Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	20	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Solidago altissima</i>	38	X	FACU	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Schedonorus arundinaceus</i>	38	X	FACU	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. <i>Vitis aestivalis</i>	38	X	FACU	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	114	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? _____ No
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).
No hydrophytic vegetation indicators present; parameter is not met.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

C-2-WET

Project Site: A1B2 City/County: Sterling / Worcester Samp. Date: 11/3/2020
 Applicant/Owner: National Grid State: MA Sampling Point: C-2-WET
 Investigator(s): C. Cyrus Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 8-12%
 Subregion (LRR or MLRA): LRR R Lat: 42.47689 Long: -71.74587 Datum: WGS 1984
 Soil Map Unit: Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Remarks: Transmission ROW in active construction site
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <u>Yes</u>	Is This Sample Area Within a Wetland? <u>Yes</u>
Hydric Soil Present? <u>Yes</u>	
Wetland Hydrology Present? <u>Yes</u>	

Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:
 Surface Water Present? _____ Depth (inches): N/A
 Water Table Present? _____ Depth (inches): N/A
 Saturation Present? _____ Depth (inches): N/A
 Wetland Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Ditch draining off-site

Remarks: At least one primary or two secondary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR_4/2	97	10YR_4/6	3	C	M	SILT_LOAM	Auger refusal at 5in

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: Rock
 Depth (inches): 5
 Hydric Soil Present? Yes

Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.

VEGETATION - Use scientific names of plants.



Sampling Point: C-2-WET

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>5</u> (B) % Dominants OBL, FACW, FAC: <u>60.00%</u> (A/B)
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		Prevalence Index Worksheet: Total % Cover of: Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum	(Plot size: 30 ft)				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
		<u>0</u>	= Total Cover		
Shrub Stratum	(Plot size: 15 ft)				
1.	<i>Sambucus nigra</i>	38	X	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.	<i>Cornus racemosa</i>	10.5	X	FAC	
3.					
4.					
5.					
6.					
7.					
8.					
		<u>48</u>	= Total Cover		
Herb Stratum	(Plot size: 5 ft)				
1.	<i>Solidago gigantea</i>	10.5	X	FACW	Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
		<u>10</u>	= Total Cover		
Woody Vines	(Plot size: 30 ft)				
1.	<i>Celastrus orbiculatus</i>	20.5		UPL	
2.	<i>Vitis aestivalis</i>	20.5		FACU	
3.					
4.					
5.					
		<u>41</u>	= Total Cover		
Remarks: (If observed, list morphological adaptations below). Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.					Hydrophytic Vegetation Present? <u>Yes</u>



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Wetland C1 up plot

Project Site: A1/B2 City/County: / Samp. Date: 5/19/2020
 Applicant/Owner: National Grid State: _____ Sampling Point: Wetland C1 up plot
 Investigator(s): T. Sullivan and E. Martin Section, Township, Range: Sterling
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.47380 Long: -71.74087 Datum: GCS WGS 1984
 Soil Map Unit: Ridgebury fine sandy loam NWI Class: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? yes Remarks: _____
 Are Normal Circumstances present? yes If needed, explain any answers in Remarks: _____
 Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Remarks: Maintained utility ROW
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>No</u>
Hydric Soil Present?	<u>no</u>		
Wetland Hydrology Present?	<u>no</u>		
Remarks: _____			

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)			
		<input type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations:					
Surface Water Present?	<u> </u>	Depth (inches):	<u>N/A</u>	Wetland Hydrology Present?	
Water Table Present?	<u> </u>	Depth (inches):	<u>N/A</u>		<u>no</u>
Saturation Present?	<u> </u>	Depth (inches):	<u>N/A</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks: _____					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	<u>10YR_3/4</u>	<u>100</u>		<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>LOAMY_SAND</u>	<u>Many fine roots</u>
4-14	<u>10YR_3/4</u>	<u>100</u>		<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>LOAMY_SAND</u>	
14-17	<u>10YR_5/4</u>			<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>LOAMY_SAND</u>	<u>10% gravel</u>
17+		<u>100</u>		<u>N/A</u>	<u>N/A</u>	<u>N/A</u>		<u>Gravel refusal</u>

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
		<input type="checkbox"/> Other (Explain in Remarks)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present?	<u>no</u>
Type:	<u> </u>		
Depth (inches):	<u> </u>		
Remarks: _____			

VEGETATION - Use scientific names of plants.



Sampling Point: Wetland C1 up plot

Tree Stratum	(Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status		
1.					Dominance Test Worksheet:	
2.					# Dominants OBL, FACW, FAC: 2 (A)	
3.					# Dominants across all strata: 4 (B)	
4.					% Dominants OBL, FACW, FAC: 50.00% (A/B)	
5.						
6.						
7.						
8.						
= Total Cover					Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 30 ft)		Absolute % Cover	Dom. Sp?	Indicator Status	Total % Cover of:	Multiply By:
1.	Frangula alnus	10.5	X	FAC	OBL 0 x 1 = 0	
2.					FACW 2 x 2 = 4	
3.					FAC 1 x 3 = 3	
4.					FACU 1 x 4 = 4	
5.					UPL 0 x 5 = 0	
6.					Sum: 4 (A)	11 (B)
7.					Prevalence Index = B/A = 2.91	
8.						
= Total Cover					Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15 ft)		Absolute % Cover	Dom. Sp?	Indicator Status	<input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations	
1.	Cornus amomum	10.5	X	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2.	Lonicera tatarica	10.5	X	FACU		
3.						
4.						
5.						
6.						
7.						
8.						
= Total Cover					Definitions of Vegetation Strata:	
Herb Stratum (Plot size: 5 ft)		Absolute % Cover	Dom. Sp?	Indicator Status	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.	
1.	Onoclea sensibilis	3		FACW		
2.	Solidago_SP	38	X	NULL		
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
= Total Cover					Hydrophytic Vegetation Present? Yes	
Woody Vines (Plot size: 30 ft)		Absolute % Cover	Dom. Sp?	Indicator Status		
1.						
2.						
3.						
4.						
5.						
= Total Cover						

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

BSC Wetland ST-W2

Wet plot wetland C1

Project Site: A1/B2 City/County: Sterling / Worcester Samp. Date: 5/19/2020
 Applicant/Owner: National Grid State: MA Sampling Point: Wet plot wetland C1
 Investigator(s): T. Sullivan and E. Martin Section, Township, Range: Sterling
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR Lat: 42.47379 Long: -71.74101 Datum: GCS WGS 1984
 Soil Map Unit: Ridgebury Fine sandy loam NWI Class: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes Remarks: _____
 Are Normal Circumstances present? Yes If needed, explain any answers in Remarks: _____
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Remarks: Maintained utility ROW
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? Remarks: _____

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>Yes</u>	Is This Sample Area Within a Wetland?	<u>Yes</u>
Hydric Soil Present?	<u>Yes</u>		
Wetland Hydrology Present?	<u>Yes</u>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Surface Soil Cracks (B6)		
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)		<input type="checkbox"/> Moss Trim Lines (B16)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)		<input type="checkbox"/> Crayfish Burrows (C8)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)		<input type="checkbox"/> Saturation Visible on Aerial (C9)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)		<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)		<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input type="checkbox"/> FAC-Neutral Test (D5)		
Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	<u> </u>	Depth (inches): <u>N/A</u>	<u>Yes</u>		
Water Table Present?	<u>X</u>	Depth (inches): <u>1</u>			
Saturation Present?	<u>X</u>	Depth (inches): <u>Surface</u>			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (in)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR_2/2	100		N/A	N/A	N/A	LOAMY_SAND	Many fine roots
3-8	10YR_2/2	100		N/A	N/A	N/A	LOAMY_SAND	
8-15	10YR_5/4	100	7.5YR_4/6	20	C	M	LOAMY_SAND	10% gravel
15-18	10YR_5/4	100	7.5YR_4/6	20	C	M	GRAVELLY_LOAMY_SA	
							ND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)		
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)		<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)		
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)		<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)		
<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> Red Parent Material (F21)		
<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)			<input type="checkbox"/> Other (Explain in Remarks)		
Restrictive Layer (if observed):			Hydric Soil Present?		
Type:	<u> </u>		<u>Yes</u>		
Depth (inches):	<u> </u>				
Remarks:					

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

VEGETATION - Use scientific names of plants.



Sampling Point: Wet plot wetland C1

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:
1. _____				# Dominants OBL, FACW, FAC: 2 (A)
2. _____				# Dominants across all strata: 2 (B)
3. _____				% Dominants OBL, FACW, FAC: 100.00% (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	0	= Total Cover		
Sapling Stratum (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Prevalence Index Worksheet:
1. _____				Total % Cover of: OBL 0 x 1 = 0
2. _____				FACW 3 x 2 = 6
3. _____				FAC 0 x 3 = 0
4. _____				FACU 0 x 4 = 0
5. _____				UPL 0 x 5 = 0
6. _____				Sum: 3 (A) 6 (B)
7. _____				Prevalence Index = B/A = 2.00
8. _____				
	0	= Total Cover		
Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <i>Cornus amomum</i>	20.5	X	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____				<input checked="" type="checkbox"/> Prevalence Index is <= 3.0
3. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain)
4. _____				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
5. _____				<input type="checkbox"/> Morphological Adaptations
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
	20	= Total Cover		
Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Definitions of Vegetation Strata:
1. <i>Phalaris arundinacea</i>	63	X	FACW	Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. <i>Onoclea sensibilis</i>	3		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
3. _____				Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. _____				Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
5. _____				Woody vine - All woody vines, regardless of height.
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	66	= Total Cover		
Woody Vines (Plot size: 30 ft)	Absolute % Cover	Dom. Sp?	Indicator Status	Hydrophytic Vegetation Present? Yes
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	0	= Total Cover		

Remarks: (If observed, list morphological adaptations below).

Warwick, Massachusetts Photographs

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Photo #1 Wetland 2/Pond 1	Location: Warwick, MA
	Description: Wetland 2 and Pond 1/Bent Pond near flags WF G75-105 and BF G-15
Photo #2 Wetland 3 [BSC Wetland WA-W2]	Location: Warwick, MA
	Description: Interior photo of Wetland 3
Photo #3 Wetland 4	Location: Warwick, MA
	Description: Wetland 4 near flag WF G77-101




Photo #4 Wetland 5 [BSC Wetland WA-W4]	Location: Warwick, MA
	Description: Wetland 4 near flag WF G78-201
Photo #5 Wetland 6	Location: Warwick, MA
	Description: Wetland 6 near flag WF G79-101
Photo #6 Wetland 7/Stream 2 [BSC Wetland WA-W6]	Location: Warwick, MA
	Description: Wetland 7 and Stream 2 near WF G80-103 and TOB G16-206




Photo #7 Wetland 8 [BSC Wetland WA-W7]	Location: Warwick, MA
	Description: Wetland 8 near flag WF G81-202
Photo #8 Wetland 9 [BSC Wetland WA-W7]	Location: Warwick, MA
	Description: Wetland 9 between flags WF G82-105 and 106
Photo #9 Wetland 10 [BSC Wetland WA-W9]	Location: Warwick, MA
	Description: Wetland 10 between flags WF G83-105 and 106



Photo #10 Wetland 11 [BSC Wetland WA-W10]	Location: Warwick, MA
	Description: Wetland 11 near flag WF G84-202
Photo #11 Stream/Impounded Water 3	Location: Warwick, MA
	Description: Impounded Black Brook near flag TOB A2-203
Photo #12 Wetland 12 [BSC Wetland WA-W9]	Location: Warwick, MA
	Description: Wetland 12 near flag WF A42-102

Photo #13 Wetland 13 [BSC Wetland WA-W12]	Location: Warwick, MA
	Description: Wetland 13 near flag WF A41-103
Photo #14 Stream 4	Location: Warwick, MA
	Description: Stream 4 near flag BF A1-302
Photo #15 Wetland 14 [BSC Wetland WA-W13]	Location: Warwick, MA
	Description: Wetland 14 near flag WF A40-104

Photo #16 Wetland 15	Location: Warwick, MA
	Description: Wetland 15 near flag WF A39-101
Photo #17 Wetland 16 [BSC Wetland WA-W14]	Location: Warwick, MA
	Description: Wetland 16 near flag WF A38-112
Photo #18 Wetland 17 [BSC Wetland WA-W15]	Location: Warwick, MA
	Description: Wetland 17 near flag WF A37-106

Photo #19 Stream 5	Location: Warwick, MA
	Description: Intermittent Stream 5 near flag SCL A23-109
Photo #20 Wetland 18 [BSC Wetland WA-W16]	Location: Warwick, MA
	Description: Wetland 18 near flag WF A36-110
Photo #21 Wetland 19 and Stream 6	Location: Warwick, MA
	Description: Wetland 19 and Stream 6 near flag WF A43-102




Photo #22 Wetland 20	Location: Warwick, MA
	Description: Wetland 20 near flag WF G101-102
Photo #23 Stream 7	Location: Warwick, MA
	Description: Stream 7 on the edge of the ROW between flags BF G19-100 and 205
Photo #24 Wetland 21	Location: Warwick, MA
	Description: Wetland 21 delineated off-ROW near flag WF G102-103




Photo #25 Wetland A22/Stream 8	Location: Warwick, MA
	Description: Wetland 22 and Stream 8 near flag WF A44-104
Photo #26 Wetland 23 [BSC Wetland WA-W20]	Location: Warwick, MA
	Description: Wetland 23 near flag WF A45-108
Photo #27 Stream 8	Location: Warwick, MA
	Description: Stream 8/Kidder Brook flowing through the ROW near flag BF A4-400

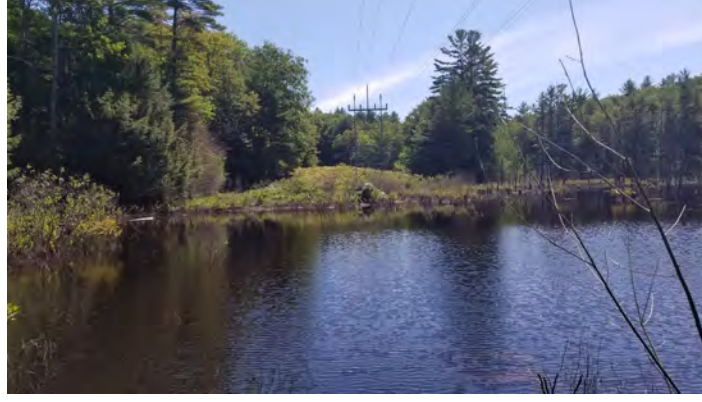



Photo #28 Wetland 24 [BSC Wetland WA-W21]	Location: Warwick, MA
	Description: Wetland 24 near flag WF A46-202
Photo #29 Stream 8	Location: Warwick, MA
	Description: Large beaver dam near flags BF A4-381 and 382
Photo #30 Stream 8	Location: Warwick, MA
	Description: impounded area of Stream 8 near flag BF A4-615

Photo #31 Wetland 25	Location: Warwick, MA
 A photograph showing a wetland area with dense green vegetation and a stream. A blue flag is visible in the water.	Description: Wetland 25 adjacent to impounded Stream 8 near flag WF A47-104
Photo #32 Wetland 28	Location: Warwick, MA
 An interior view of a wetland area with tall grasses and trees. A blue flag is visible in the background.	Description: Interior photo of Wetland 28 adjacent to impounded Stream 8
Photo #33 Stream 8 Beaver Lodge	Location: Warwick, MA
 A photograph of a beaver lodge constructed from sticks and branches, situated in a stream. The lodge is surrounded by water and trees.	Description: Beaver lodge within impounded Stream 8 near flag BF A4-703




<p>Photo #34 Wetland 27 [BSC Wetland WA-W22]</p>  A photograph of a wetland area. In the foreground, there is a dense thicket of green ferns and other vegetation. In the middle ground, a beaver lodge is visible, constructed from sticks and branches. A small body of water is partially visible behind the lodge. The background shows a line of trees under a clear sky.	<p>Location: Warwick, MA Description: Wetland 27 with the beaver lodge in view near flag WF A49-101</p>
<p>Photo #35 Wetland 28</p>  An interior photograph of a wetland. The scene is dominated by a dense growth of ferns, some of which are a vibrant yellowish-brown color, suggesting they might be dead or in a different stage of growth. A black surveying pole with a blue flag is visible in the center of the frame. The background is filled with more green vegetation.	<p>Location: Warwick, MA Description: Interior photo of Wetland 28</p>
<p>Photo #36 Wetland 29</p>  An interior photograph of a wetland. The ground is covered with a mix of green and brown vegetation. A black surveying pole with a blue flag is positioned on the right side of the frame. Another pole with a red and white top is visible on the left. The background shows more dense green foliage.	<p>Location: Warwick, MA Description: Interior photo of Wetland 29</p>







Photo #37 Wetland 30	Location: Warwick, MA
	Description: Interior photo of Wetland 30
Photo #38 Wetland 31	Location: Warwick, MA
	Description: Wetland 31 near flag WF G70-12
Photo #39 Wetland 32	Location: Warwick, MA
	Description: Wetland 32 between flags WF G69-100 and 104

Photo #40 Stream 9/Open Water	Location: Warwick, MA
	Description: Richards Reservoir was delineated as Stream/Open Water 9; photo was taken near flag BF G16-100
Photo #41 Wetland 34	Location: Warwick, MA
	Description: Interior photo of Wetland 34 adjacent to Richards Reservoir
Photo #42 Wetland 35	Location: Warwick, MA
	Description: Interior photo of Wetland 35




<p>Photo #43 Stream 10</p> 	<p>Location: Warwick, MA Description: Stream 10 near flag BF G14-106</p>
<p>Photo #44 Wetland 36</p> 	<p>Location: Warwick, MA Description: Wetland 36 near flag WF G66-102</p>
<p>Photo #45 Stream 11</p> 	<p>Location: Warwick, MA Description: Stream 11 near flag BF G13-202</p>




Photo #46 Wetland 37	Location: Warwick, MA
	Description: Interior photo of Wetland 37
Photo #47 Stream 12	Location: Warwick, MA
	Description: Stream 12 near flag BF G12-200
Photo #48 Wetland 38	Location: Warwick, MA
	Description: Wetland 38 near flag WF G64-301




Photo #49 Wetland 39	Location: Warwick, MA
	Description: Wetland 39 near flag WF G63-101
Photo #50 Wetland 40	Location: Warwick, MA
	Description: Interior photo of Wetland 40
Photo #51 Wetland 41	Location: Warwick, MA
	Description: Wetland 41 near flag WF G61-203




Photo #52 Wetland 42	Location: Warwick, MA
 A photograph showing a wetland area with dense green vegetation and tall grasses. A survey flag is visible in the middle ground.	Description: Wetland 42 near flag WF G60-115
Photo #53 Stream 14	Location: Warwick, MA
 A photograph of a stream flowing over large, moss-covered rocks. The surrounding area is lush with green foliage.	Description: Stream 10 near flags BF G10-303 and 403
Photo #54 Wetland 43	Location: Warwick, MA
 A photograph showing a dense thicket of green and yellowish vegetation, likely a wetland area. A survey flag is visible in the center.	Description: Interior photo near Wetland 43

Photo #55 Wetland 44	Location: Warwick, MA
 A photograph showing a dense thicket of wetland vegetation. In the foreground, there is a black surveying instrument on a tripod with a blue strap. To its right, a red and black surveying tool is visible. The background is filled with various green and brown plants, including tall grasses and shrubs.	Description: Interior photo of Wetland 44

Royalston, Massachusetts Photographs

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Photo #1 Wetland 1 [BSC Wetland RO-W1]	Location: Royalston, MA
	Description: Interior photo of Wetland 1
Photo #2 Wetland 2	Location: Royalston, MA
	Description: Interior photo of Wetland 2
Photo #3 Wetland 3	Location: Royalston, MA
	Description: Interior photo of Wetland 3

Photo #4 Wetland 4	Location: Royalston, MA
	Description: Interior photo of Wetland 4
Photo #5 Wetland 5	Location: Royalston, MA
	Description: Interior photo of Wetland 5
Photo #6 Wetland 6	Location: Royalston, MA
	Description: Wetland 6 along edge of southern ROW boundary




Photo #7 Stream 1	Location: Royalston, MA
	Description: Stream 1 near flag BF G16-100
Photo #8 Wetland 7	Location: Royalston, MA
	Description: Interior photo of Wetland 7
Photo #9 Wetland 8	Location: Royalston, MA
	Description: Interior photo of Wetland 8

Photo #10 Wetland 9 [BSC Wetland RO-W9]	Location: Royalston, MA
 A photograph showing a dense thicket of green ferns and other wetland plants. The ground is covered with fallen leaves and organic matter.	Description: Wetland 10 near flag WF G89-100
Photo #11 Wetland 10 [BSC Wetland RO-W10]	Location: Royalston, MA
 A photograph of a wetland area with a survey flag (red and blue) placed among dense vegetation, including ferns and tall grasses.	Description: Wetland 10 near flag WF G100-204
Photo #12 Wetland 11 [BSC Wetland RO-W11]	Location: Royalston, MA
 An interior photograph of a wetland area showing dense, tall grasses and other vegetation. A survey flag is visible in the background.	Description: Interior photo of Wetland 11

Photo #13 Stream 2/Collar Brook	Location: Royalston, MA
	Description: Looking across impounded Collar Brook towards Structure 220
Photo #14 Wetland 12 [BSC Wetland RO-W12]	Location: Royalston, MA
	Description: Interior photo of Wetland 12
Photo #15 Wetland 13 [BSC Wetland RO-W13]	Location: Royalston, MA
	Description: Interior photo of Wetland 13




Photo #16 Wetland 14 [BSC Wetland RO-W14]	Location: Royalston, MA
	Description: Interior photo of Wetland 14
Photo #17 Wetland 15 [BSC Wetland RO-W15]	Location: Royalston, MA
	Description: Interior photo of Wetland 15
Photo #18 Wetland 16 [BSC Wetland RO-W16]	Location: Royalston, MA
	Description: Interior photo of Wetland 16




Photo #19 Wetland 17 [BSC Wetland RO-W17]	Location: Royalston, MA
	Description: Interior photo of Wetland 17
Photo #20 Wetland 18 [BSC Wetland RO-W18]	Location: Royalston, MA
	Description: Interior photo of Wetland 18
Photo #21 Wetland 19 [BSC Wetland RO-W19]	Location: Royalston, MA
	Description: Interior photo of Wetland 19




Photo #22 Stream 5/Boyce Brook	Location: Royalston, MA
 A photograph of a narrow stream flowing through a dense forest. The water is clear and reflects the surrounding green foliage and trees. The banks are covered with various plants and fallen branches.	Description: Stream 5/Boyce Brook near flag BF F4-112
Photo #23 Wetland 20	Location: Royalston, MA
 A photograph showing a wetland area with dense, lush green vegetation. The plants are tall and appear to be a mix of ferns and other wetland species. The ground is not clearly visible, suggesting a saturated or waterlogged environment.	Description: Wetland 20 between flags WF F18-101 and 102
Photo #24 Wetland 21/Stream 6 [BSC Wetland RO-W21]	Location: Royalston, MA
 A photograph of a wetland area with a stream. The foreground is dominated by tall, green grasses and other vegetation. In the background, there are trees and a stream flowing through the landscape. The overall scene is a natural, undisturbed wetland environment.	Description: Wetland 21 and Stream 6 near flag BF F3-100

Photo #25 Wetland 22 [BSC Wetland RO-W22]	Location: Royalston, MA
	Description: Interior photo of Wetland 22
Photo #26 Wetland 23	Location: Royalston, MA
	Description: Interior photo of Wetland 23
Photo #27 Wetland 24 [BSC Wetland RO-W24]	Location: Royalston, MA
	Description: Interior photo of Wetland 24




Photo #28 Stream 7	Location: Royalston, MA
 A photograph showing a stream flowing through a wooded area. The water is clear and surrounded by dense green vegetation and fallen logs. A blue flag is visible on the left bank.	Description: Stream 7 near flag BF F2-208
Photo #29 Wetland 25 [BSC Wetland RO-W26]	Location: Royalston, MA
 A photograph of a wetland area with tall grasses and a utility pole in the background. A surveying instrument is visible in the foreground.	Description: Wetland 25 looking east
Photo #30 Wetland 26 [BSC Wetland RO-W27]	Location: Royalston, MA
 An interior photograph of a wetland area with dense vegetation, including ferns and tall grasses. A surveying instrument is visible in the foreground.	Description: Interior photo of Wetland 26




Photo #31 Wetland 27 [BSC Wetland RO-W28]	Location: Royalston, MA
 A photograph of a wetland area with dense green vegetation, including ferns and grasses. A survey marker consisting of a black pipe with a pink ribbon is visible in the foreground.	Description: Wetland 7 looking east
Photo #32 Wetland 28 [BSC Wetland RO-W28]	Location: Royalston, MA
 An interior photograph of a wetland area showing dense, multi-colored vegetation with green, yellow, and red leaves. A survey marker with a black pipe and pink ribbon is visible in the lower right.	Description: Interior photo of Wetland 28
Photo #33 Wetland 30 [BSC Wetland RO-W31]	Location: Royalston, MA
 An interior photograph of a wetland area with dense green vegetation, including ferns and tall grasses. A survey marker with a black pipe and pink ribbon is visible in the foreground.	Description: Interior photo of Wetland 30




Photo #34 Wetland 32 [BSC Wetland RO-W32]	Location: Royalston, MA
	Description: Wetland 32 near flag WF G40-101
Photo #35 Wetland 32/Stream 9 [BSC Wetland RO-W32]	Location: Royalston, MA
	Description: Wetland 32 and Stream 9 near flag BF G8-100
Photo #36 Wetland 35 [BSC Wetland RO-W35]	Location: Royalston, MA
	Description: Interior photo of Wetland 35


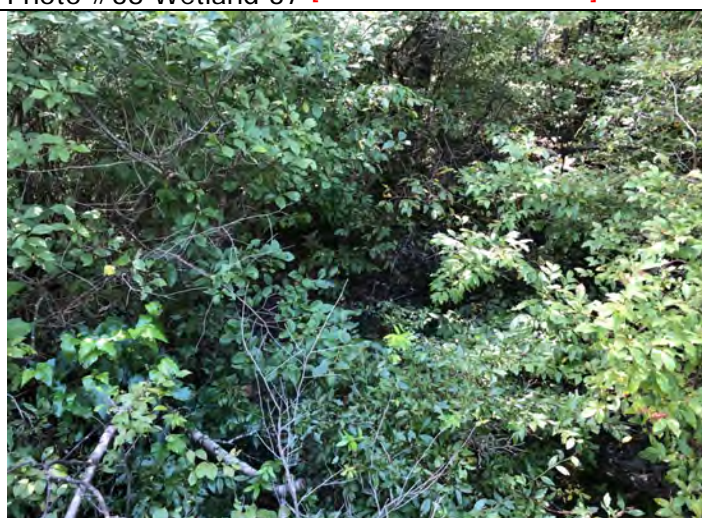

Photo #37 Wetland 36 [BSC Wetland RO-W36]	Location: Royalston, MA
	Description: Interior photo of Wetland 36
Photo #38 Wetland 37 [BSC Wetland RO-W37]	Location: Royalston, MA
	Description: Interior photo of Wetland 37
Photo #39 Wetland 38 [BSC Wetland RO-W38]	Location: Royalston, MA
	Description: Interior photo of Wetland 38

Photo #40 Wetland 40 [BSC Wetland RO-W56]	Location: Royalston, MA
	Description: Wetland 40 near flag WF E3-101
Photo #41 Wetland 43 [BSC Wetland RO-W59]	Location: Royalston, MA
	Description: Wetland 43 near flag WF E6-106
Photo #42 Wetland 45 [BSC Wetland RO-W61]	Location: Royalston, MA
	Description: Wetland 45 near flag WF E8-103





<p>Photo #43 Wetland 47 [BSC Wetland RO-W63]</p>  A photograph of a wetland area with dense green vegetation and scattered rocks. In the background, several utility poles are visible against a blue sky with light clouds.	<p>Location: Royalston, MA Description: Wetland 47 near flag WF E10-101</p>
<p>Photo #44 Wetland 49 [BSC Wetland RO-W65]</p>  A photograph of a wetland area with dense green vegetation and scattered rocks. In the background, several utility poles are visible against a blue sky with light clouds.	<p>Location: Royalston, MA Description: Wetland 49 near flag WF E12-107</p>
<p>Photo #45 Wetland 51 [BSC Wetland RO-W67]</p>  A photograph of a wetland area with dense green vegetation and scattered rocks. In the background, several utility poles are visible against a blue sky with light clouds.	<p>Location: Royalston, MA Description: Wetland 51 near flag WF E14-111</p>

Photo #46 Wetland 53/Stream 11	Location: Royalston, MA
 <p>[BSC Wetland RO-W39]</p>	Description: Looking west down ROW over impounded Beaver Brook near flag WF E1-201
Photo #47 Wetland 53	Location: Royalston, MA
 <p>[BSC Wetland RO-W39]</p>	Description: Wetland 53 near flag WF E1-217
Photo #48 Wetland 54	Location: Royalston, MA
 <p>[BSC Wetland RO-W41]</p>	Description: Interior photo of Wetland 54


<p>Photo #49 Wetland 55 [BSC Wetland RO-W42]</p> 	<p>Location: Royalston, MA Description: Interior photo of Wetland 55</p>
<p>Photo #50 Wetland 59 [BSC Wetland RO-W46]</p> 	<p>Location: Royalston, MA Description: Wetland 59 near flag WF F11-207</p>
<p>Photo #51 Stream 13</p> 	<p>Location: Royalston, MA Description: Impounded Stream 13 near flag BF 1-1-7</p>

Photo #52 Wetland 60 [BSC Wetland RO-W47]	Location: Royalston, MA
	Description: Interior photo of Wetland 60
Photo #53 Wetland 61 [BSC Wetland RO-W48]	Location: Royalston, MA
	Description: Interior photo of Wetland 61
Photo #54 Wetland 63 [BSC Wetland RO-W50]	Location: Royalston, MA
	Description: Wetland 63 near flag WF 7-201

Photo #55 Wetland 64 [BSC Wetland RO-W51]	Location: Royalston, MA
	Description: Interior photo of Wetland 64
Photo #56 Wetland 65 [BSC Wetland RO-W52]	Location: Royalston, MA
	Description: Wetland 65 near flag WF G35-106
Photo #57 Wetland 66 [BSC Wetland RO-W53]	Location: Royalston, MA
	Description: Interior photo of Wetland 66

Photo #58 Wetland 67 [BSC Wetland RO-W54]	Location: Royalston, MA
	Description: Interior photo of Wetland 67

Athol, Massachusetts Photographs

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<p>Photo #1 Wetland 1 [BSC Wetland AT-W1]</p> 	<p>Location: Athol, MA</p> <p>Description: Wetland 1 impounded by a beaver dam</p>
<p>Photo #2 Wetland 2 [BSC Wetland AT-W2]</p> 	<p>Location: Athol, MA</p> <p>Description: Wetland 2 near flag WF D16-203</p>
<p>Photo #3 Wetland 4 [BSC Wetland AT-W4]</p> 	<p>Location: Athol, MA</p> <p>Description: Wetland 4 near flag WF E18-111</p>

Photo #4 Stream 1	Location: Athol, MA
	Description: Stream 1 near flag SCL E1-100
Photo #5 Wetland 5 [BSC Wetland AT-W5]	Location: Athol, MA
	Description: Wetland 5 near flag WF E19-306
Photo #6 Wetland 6 [BSC Wetland AT-W7]	Location: Athol, MA
	Description: Wetland 6 near flag WF E20-202




Photo #7 Wetland 7/Stream 2 [BSC Wetland AT-W8]	Location: Athol, MA
	Description: Wetland 7 and Stream 2 near flag BF E2-102
Photo #8 Wetland 10 [BSC Wetland AT-W9]	Location: Athol, MA
	Description: Wetland 10 near flag WF E27-104
Photo #9 Wetland 13 [BSC Wetland AT-W13]	Location: Athol, MA
	Description: Interior photo of Wetland 13



Photo #10 Wetland 14 [BSC Wetland AT-W14]	Location: Athol, MA
	Description: Interior photo of Wetland 14
Photo #11 Stream 6	Location: Athol, MA
	Description: Stream 6 near flag BF G17-210
Photo #12 Wetland 16 [BSC Wetland AT-W19]	Location: Athol, MA
	Description: Interior photo of Wetland 16




Photo #13 Wetland 17 [BSC Wetland AT-W20]	Location: Athol, MA
	Description: Interior photo of Wetland 17
Photo #14 Stream 7	Location: Athol, MA
	Description: Stream 7 near flag BF G21-113
Photo #15 Wetland 19	Location: Athol, MA
	Description: Interior photo of Wetland 19

Photo #16 Wetland 20 [BSC Wetland AT-W23]	Location: Athol, MA
	Description: Interior photo of Wetland 20
Photo #17 Stream 8/Millers River	Location: Athol, MA
	Description: Stream 8/Millers River near flag BF G18-138

Winchendon, Massachusetts Photographs

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Photo #1 Wetland 1 [BSC Wetland WIN-W1]	Location: Winchendon, MA
	Description: Interior photo of Wetland 1
Photo #2 Wetland 3 [BSC Wetland WIN-W2]	Location: Winchendon, MA
	Description: Interior photo of Wetland 3
Photo #3 Wetland 5 [BSC Wetland WIN-W3]	Location: Winchendon, MA
	Description: Wetland 5 near flag WF G29-103




Photo #4 Wetland 6 [BSC Wetland WIN-W4]	Location: Winchendon, MA
	Description: Interior photo of Wetland 6
Photo #5 Wetland 7 [BSC Wetland WIN-W6]	Location: Winchendon, MA
	Description: Interior photo of Wetland 7
Photo #6 Wetland 8 [BSC Wetland WIN-W7]	Location: Winchendon, MA
	Description: Interior photo of Wetland 8

Photo #7 Wetland 9 [BSC Wetland WIN-W8]	Location: Winchendon, MA
	Description: Interior photo of Wetland 9
Photo #8 Wetland 10 [BSC Wetland WIN-W9]	Location: Winchendon, MA
	Description: Interior photo of Wetland 10
Photo #9 Stream 1	Location: Winchendon, MA
	Description: Stream 1 near flag BF G6-202




Photo #10 Wetland 11 [BSC Wetland WIN-W9]	Location: Winchendon, MA
 A photograph showing a dense thicket of green vegetation, including tall grasses and shrubs, bordering a stream. A red survey pole is visible in the middle ground.	Description: Interior photo of Wetland 11 with Stream1 in the foreground
Photo #11 Wetland 12 [BSC Wetland WIN-W10]	Location: Winchendon, MA
 A photograph of a wetland area with dense green vegetation, including ferns and other plants. A red survey pole is visible in the foreground.	Description: Interior photo of Wetland 12
Photo #12 Wetland 14 [BSC Wetland WIN-W12]	Location: Winchendon, MA
 A photograph of a wetland area with dense green vegetation, including tall grasses and shrubs. Two red survey poles are visible in the foreground.	Description: Interior photo of Wetland 14



Photo #13 Wetland 15 [BSC Wetland WIN-W13]	Location: Winchendon, MA
	Description: Interior photo of Wetland 15
Photo #14 Wetland 16 [BSC Wetland WIN-W16]	Location: Winchendon, MA
	Description: Wetland 16 adjacent to access road
Photo #15 Wetland 17 [BSC Wetland WIN-W17]	Location: Winchendon, MA
	Description: Wetland 17 near flag WF C39-14A

Photo #16 Wetland 18 [BSC Wetland WIN-W19]	Location: Winchendon, MA
	Description: Interior photo of Wetland 18
Photo #17 Stream 2	Location: Winchendon, MA
	Description: Stream 2 between flags BF C36-11B and C36-10C
Photo #18 Wetland 22 [BSC Wetland WIN-W36]	Location: Winchendon, MA
	Description: Wetland 22 near flag WF C35-6A


Photo #19 Wetland 23 [BSC Wetland WIN-W14]	Location: Winchendon, MA
	Description: Wetland 23 near flag WF G23-204
Photo #20 Wetland 25 [BSC Wetland WIN-W15]	Location: Winchendon, MA
	Description: Interior photo of Wetland 25
Photo #21 Wetland 24	Location: Winchendon, MA
	Description: Photo on Wetland 24 on southern edge of ROW boundary




Photo #22 Wetland 26 [BSC Wetland WIN-W22]	Location: Winchendon, MA
	Description: Wetland 26 near flag WF G20-108
Photo #23 Wetland 27 [BSC Wetland WIN-W23]	Location: Winchendon, MA
	Description: Wetland 27 with the edge of Stoddard Pond in view
Photo #24 Stream 3/Stoddard Pond	Location: Winchendon, MA
	Description: Stream 5/Stoddard Pond near flag BF G5-100




Photo #25 Wetland 29 [BSC Wetland WIN-W25]	Location: Winchendon, MA
	Description: Wetland 29 near flag WF G17-106
Photo #26 Stream 4	Location: Winchendon, MA
	Description: Stream 4 near flag BF G4-200
Photo #27 Wetland 30 [BSC Wetland WIN-W26]	Location: Winchendon, MA
	Description: Interior photo of Wetland 30

Photo #28 Wetland 31 [BSC Wetland WIN-W27]	Location: Winchendon, MA
	Description: Interior photo of Wetland 31
Photo #29 Wetland 32 [BSC Wetland WIN-W28]	Location: Winchendon, MA
	Description: Interior photo of Wetland 32
Photo #30 Wetland 33 [BSC Wetland WIN-W29]	Location: Winchendon, MA
	Description: Interior photo of Wetland 33

<p>Photo #31 Stream 5</p>  A photograph showing a stream flowing through a wooded area. The stream is surrounded by dense green vegetation and trees. A blue flag is visible in the background, marking the location of flag BF G3-200.	<p>Location: Winchendon, MA Description: Stream 5 near flag BF G3-200</p>
<p>Photo #32 Wetland 34 [BSC Wetland WIN-W30]</p>  A photograph showing a wetland area with dense green vegetation, including ferns and other plants. A red and black surveying tool is visible in the foreground, indicating the location of Wetland 34.	<p>Location: Winchendon, MA Description: Interior photo of Wetland 34</p>
<p>Photo #33 Wetland 36 [BSC Wetland WIN-W31]</p>  A photograph showing a wetland area with dense green vegetation, including ferns and other plants. A red and black surveying tool is visible in the foreground, indicating the location of Wetland 36.	<p>Location: Winchendon, MA Description: Interior photo of Wetland 36</p>

Photo #34 Wetland 37 [BSC Wetland WIN-W32]	Location: Winchendon, MA
 A photograph of a dense, lush green wetland area. The vegetation is thick with various types of ferns and other plants. A red flag is visible, tied to a thin tree trunk in the center-left of the frame.	Description: Wetland 37 near flag WF G9-106
Photo #35 Wetland 38 [BSC Wetland WIN-W33]	Location: Winchendon, MA
 An interior view of a wetland area. The ground is covered with a mix of green grasses and ferns. A black surveying tripod is positioned on the left side of the frame. A red flag is visible in the background, partially obscured by the vegetation.	Description: Interior photo of Wetland 38
Photo #36 Wetland 39 [BSC Wetland WIN-W34]	Location: Winchendon, MA
 An interior view of a wetland area. The ground is covered with a mix of green grasses and ferns. A black surveying tripod is positioned in the foreground. A red flag is visible in the background, partially obscured by the vegetation.	Description: Interior photo of Wetland 39

Templeton, Massachusetts Photographs

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Photo #1 Wetland 1	Location: Templeton, MA
	Description: Wetland 1 near flag WF C34-3
Photo #2 Stream 1	Location: Templeton, MA
	Description: Stream 1 near flag BF C34-5B
Photo #3 Wetland 2	Location: Templeton, MA
	Description: Looking downslope at Wetland 2

Photo #4 Wetland 3	Location: Templeton, MA
	Description: Interior photo of Wetland 3
Photo #5 Wetland 4	Location: Templeton, MA
	Description: Interior photo of Wetland 4

Gardner, Massachusetts Photographs

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Photo #1 Wetland 1/Stream 1	Location: Gardner, MA
	Description: Wetland 1 and Stream 1 near flag BF G2-200b
Photo #2 Wetland 2 [BSC Wetland GA-W1]	Location: Gardner, MA
	Description: Interior photo of Wetland 2
Photo #3 Wetland 4/Stream 2 [BSC Wetland GA-W3]	Location: Gardner, MA
	Description: Interior photo of Wetland 4 and Stream 2/Wilder Brook




Photo #4 Wetland 5 [BSC Wetland GA-W4]	Location: Gardner, MA
	Description: Interior photo of Wetland 5
Photo #5 Wetland 6 [BSC Wetland GA-W5]	Location: Gardner, MA
	Description: Interior photo of Wetland 6
Photo #6 Wetland 7 [BSC Wetland GA-W6]	Location: Gardner, MA
	Description: Interior photo of Wetland 7

Photo #7 Wetland 8 [BSC Wetland GA-W7]	Location: Gardner, MA
	Description: Impounded area of Wetland 8
Photo #8 Stream 3	Location: Gardner, MA
	Description: Stream 3 near photo BF C21-1A
Photo #9 Wetland 9 [BSC Wetland GA-W36]	Location: Gardner, MA
	Description: Interior photo of Wetland 9

Photo #10 Wetland 11 [BSC Wetland GA-W38]	Location: Gardner, MA
	Description: Interior photo of Wetland 11
Photo #11 Stream 4	Location: Gardner, MA
	Description: Stream 4 near flag BF C24-6B
Photo #12 Wetland 12 [BSC Wetland GA-W39]	Location: Gardner, MA
	Description: Interior photo of Wetland 12




Photo #13 Stream 5	Location: Gardner, MA
 A photograph showing a narrow stream flowing through a dense thicket of trees and shrubs. The water is shallow and appears to be surrounded by a wetland environment.	Description: Stream 5 near flag BF C26-7C
Photo #14 Wetland 13 [BSC Wetland GA-W40]	Location: Gardner, MA
 A photograph of a wetland area with dense green vegetation, including ferns and other plants, growing in a wooded or semi-wooded area.	Description: Interior photo of Wetland 13
Photo #15 Wetland 14 [BSC Wetland GA-W41]	Location: Gardner, MA
 A photograph showing a dense thicket of green vegetation, including ferns and other plants, in a wetland area.	Description: Interior photo of Wetland 14







Photo #16 Wetland 16 [BSC Wetland GA-W9]	Location: Gardner, MA
	Description: Interior photo of Wetland 16
Photo #17 Wetland 18 [BSC Wetland GA-W11]	Location: Gardner, MA
	Description: Interior photo of Wetland 18
Photo #18 Stream 6	Location: Gardner, MA
	Description: Stream 6 near flag BF C30-3A

Photo #19 Wetland 20	Location: Gardner, MA
	Description: Interior photo of Wetland 20
Photo #20 Wetland 21 [BSC Wetland GA-W13]	Location: Gardner, MA
	Description: Wetland 21 near flag WF B61-102
Photo #21 Wetland 22 [BSC Wetland GA-W14]	Location: Gardner, MA
	Description: Wetland 22 near flag WF D16A-9

Photo #22 Wetland 23 [BSC Wetland GA-W15]	Location: Gardner, MA
	Description: Interior photo of Wetland 23
Photo #23 Wetland 25 [BSC Wetland GA-W7]	Location: Gardner, MA
	Description: Interior photo of Wetland 25
Photo #24 Wetland 26/Stream 10	Location: Gardner, MA
	Description: Wetland 26 and Stream 10 near flag BF D12A-TOB-8

Photo #25 Wetland 27 [BSC Wetland GA-W19]	Location: Gardner, MA
	Description: Interior photo of Wetland 27
Photo #26 Wetland 28 [BSC Wetland GA-W20]	Location: Gardner, MA
	Description: Wetland 28 near flag WF D10-34
Photo #27 Wetland 29 [BSC Wetland GA-W21]	Location: Gardner, MA
	Description: Wetland 29 near flag WF D9-6


<p>Photo #28 Wetland 30 [BSC Wetland GA-W22]</p> 	<p>Location: Gardner, MA</p> <p>Description: Interior photo of Wetland 30</p>
<p>Photo #29 Wetland 31 [BSC Wetland GA-W23]</p> 	<p>Location: Gardner, MA</p> <p>Description: Interior photo of Wetland 31</p>
<p>Photo #30 Wetland 33 [BSC Wetland GA-W25]</p> 	<p>Location: Gardner, MA</p> <p>Description: Wetland 33 near flag WF D5-17</p>

Photo #31 Wetland 34 [BSC Wetland GA-W26]	Location: Gardner, MA
 A photograph showing a dense thicket of green vegetation, likely a wetland area, with a utility pole visible in the background.	Description: Wetland 34 near flag WF C45-10
Photo #32 Wetland 35 [BSC Wetland GA-W27]	Location: Gardner, MA
 An interior view of a wetland area with tall grasses and a survey flag (red and white striped) attached to a metal stake.	Description: Interior photo of Wetland 35
Photo #33 Wetland 36 [BSC Wetland GA-W28]	Location: Gardner, MA
 An interior view of a wetland area with dense vegetation and a survey flag (pink and white striped) attached to a metal stake.	Description: Interior photo of Wetland 36

<p>Photo #34 Wetland 37 [BSC Wetland GA-W29]</p> 	<p>Location: Gardner, MA Description: Interior photo of Wetland 37</p>
<p>Photo #35 Wetland 38 [BSC Wetland GA-W30]</p> 	<p>Location: Gardner, MA Description: Interior photo of Wetland 38</p>
<p>Photo #36 Wetland 39 [BSC Wetland GA-W31]</p> 	<p>Location: Gardner, MA Description: Interior photo of Wetland 39</p>





<p>Photo #37 Wetland 40 [BSC Wetland GA-W32]</p> 	<p>Location: Gardner, MA Description: Interior photo of Wetland 40</p>
<p>Photo #38 Wetland 42</p> 	<p>Location: Gardner, MA Description: Wetland 42 near flag WF B60-104</p>
<p>Photo #35 Wetland 43 [BSC Wetland GA-W35]</p> 	<p>Location: Gardner, MA Description: Interior photo of Wetland 43</p>

Photo #35 Wetland 44	Location: Gardner, MA
	Description: Interior photo of Wetland 44

Westminster, Massachusetts Photographs

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Photo #1 Wetland 1 [BSC Wetland WE-W1]	Location: Gardner, MA
	Description: Looking east at Wetland 1
Photo #2 Wetland 2 [BSC Wetland WE-W2]	Location: Gardner, MA
	Description: Interior photo of Wetland 2 with tire rutting
Photo #3 Stream 1	Location: Gardner, MA
	Description: Stream/Pond 1 near flag BF B56-202

Photo #4 Stream 2	Location: Gardner, MA
	Description: Stream 2/pond near flag BF B55-202
Photo #5 Wetland 3 [BSC Wetland WE-W3]	Location: Gardner, MA
	Description: Wetland 3 near flag WF B54-202
Photo #6 Wetland 4 [BSC Wetland WE-W4]	Location: Gardner, MA
	Description: Wetland 4 near flag WF B52-101




Photo #7 Wetland 5 [BSC Wetland WE-W5]	Location: Gardner, MA
 A photograph of a wetland area with dense green vegetation, including ferns and shrubs. In the background, a tall metal utility tower is visible against a cloudy sky.	Description: Wetland 5 near flag WF C18-20
Photo #8 Wetland 7 [BSC Wetland WE-W18]	Location: Gardner, MA
 An interior view of a wetland area showing a dense thicket of green and yellowish vegetation, with a utility tower visible in the background through the trees.	Description: Interior photo of Wetland 7
Photo #9 Wetland 8 [BSC Wetland WE-W19]	Location: Gardner, MA
 A photograph of a wetland area featuring a dense forest of tall, thin trees with light-colored bark. The ground is covered in dark, moist soil and fallen branches.	Description: Wetland 8 near flag WF C16-3




Photo #10 Wetland 9 [BSC Wetland WE-W20]	Location: Gardner , MA
	Description: Wetland 9 near flag WF C15A-4
Photo #11 Wetland 10 [BSC Wetland WE-W21]	Location: Gardner , MA
	Description: Wetland 10 near flag WF C14A-15
Photo #12 Wetland 10 [BSC Wetland WE-W21]	Location: Gardner , MA
	Description: Beaver dam and impounded area inside Wetland 10

Photo #13 Wetland 11 [BSC Wetland WE-W6]	Location: Gardner , MA
	Description: Wetland 11 near flag WF B50-201
Photo #14 Wetland 12 [BSC Wetland WE-W7]	Location: Gardner , MA
	Description: Wetland 12 near flag WF B49-101
Photo #15 Wetland 13 [BSC Wetland WE-W9]	Location: Gardner , MA
	Description: Wetland 14 near flag WF B46-104







Photo #16 Wetland 14 [BSC Wetland WE-W9]	Location: Gardner , MA
	Description: Interior photo of Wetland 15
Photo #17 Wetland 15 [BSC Wetland WE-W11]	Location: Gardner , MA
	Description: Interior photo of Wetland 16
Photo #18 Wetland 16 [BSC Wetland WE-W12]	Location: Gardner , MA
	Description: Interior photo of Wetland 17

Photo #19 Wetland 17 [BSC Wetland WE-W13]	Location: Gardner , MA
	Description: Wetland 18 near flag WF B38-101
Photo #20 Wetland 18 [BSC Wetland WE-W15]	Location: Gardner , MA
	Description: Interior photo of Wetland 19
Photo #21 Wetland 19 [BSC Wetland WE-W16]	Location: Gardner , MA
	Description: Interior photo of Wetland 20

Photo #22 Wetland 20 [BSC Wetland WE-W17]	Location: Gardner , MA
	Description: Interior photo of Wetland 21
Photo #23 Stream 3	Location: Gardner , MA
	Description: Stream 3 between flags BF B14-107 and 206
Photo #24 Stream 4	Location: Gardner , MA
	Description: Stream 4 near flag BF B65-101

Fitchburg, Massachusetts Photographs

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Photo #1 Wetland 1 [BSC Wetland FI-W1]	Location: Fitchburg, MA
	Description: Interior photo of Wetland 1
Photo #2 Stream 1/Sawmill Pond	Location: Fitchburg, MA
	Description: Stream 1/Sawmill Pond near flag BF B43-225
Photo #3 Wetland 3	Location: Fitchburg, MA
	Description: Wetland 3 near flag WF D1A-11

Photo #4 Wetland 4 [BSC Wetland FI-W3]	Location: Fitchburg, MA
	Description: Wetland 4 near flag WF B43-215
Photo #5 Wetland 5	Location: Fitchburg, MA
	Description: Wetland 5 near flag WF B42-101
Photo #6 Wetland 5/Potential Vernal Pool	Location: Fitchburg, MA
	Description: Potential vernal pool identified within Wetland 5

<p>Photo #7 Wetland 8</p> 	<p>Location: Fitchburg, MA Description: Wetland 8 near flag WF B32-203</p>
<p>Photo #8 Wetland 8</p> 	<p>Location: Fitchburg, MA Description: Wetland 8 near flag WF B32-112</p>
<p>Photo #9 Wetland 9 [BSC Wetland FI-W10]</p> 	<p>Location: Fitchburg, MA Description: Wetland 8 near flag WF B31-109</p>

Leominster, Massachusetts Photographs

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Photo #1 Wetland 1 [BSC Wetland LE-W1]	Location: Leominster, MA
	Description: Wetland 1 near flag WF B36-108
Photo #2 Wetland 2 [BSC Wetland LE-W2]	Location: Leominster, MA
	Description: Wetland 2 near flag WF B35-98
Photo #3 Wetland 3	Location: Leominster, MA
	Description: Interior photo of Wetland 3

Photo #4 Wetland 4 [BSC Wetland LE-W3]	Location: Leominster, MA
 A photograph showing a wetland area with tall green grasses and reeds. In the background, there are power lines and a clear blue sky with some clouds.	Description: Wetland 4 near flag WF B30-106
Photo #5 Stream 1/Notown Reservoir	Location: Leominster, MA
 A photograph showing a view of a reservoir or stream. The water is calm and reflects the sky. There are trees and vegetation in the background and foreground.	Description: View of Notown Reservoir near flag WF B30-200
Photo #6 Wetland 5/Stream 2 [BSC Wetland LE-W4]	Location: Leominster, MA
 A photograph showing a stream flowing through a wetland area. The water is clear and surrounded by dense green vegetation and trees.	Description: Wetland 5 and Stream 2/Monoosnoc Brook near flag BF B12-100

Photo #7 Wetland 6/Stream 3	Location: Leominster, MA
	Description: Wetland 6 and Stream 3/Notown Reservoir near flag WF B28-109
Photo #8 Wetland 7 [BSC Wetland LE-W6]	Location: Leominster, MA
	Description: Interior photo of Wetland 7
Photo #9 Wetland 8 [BSC Wetland LE-W7]	Location: Leominster, MA
	Description: Wetland 8 near flag WF B26-110

Photo #10 Stream 4	Location: Leominster, MA
	Description: Stream 4 near flag BF B11-107
Photo #11 Wetland 9 [BSC Wetland LE-W8]	Location: Leominster, MA
	Description: Interior photo of Wetland 9
Photo #12 Wetland 10 [BSC Wetland LE-W9]	Location: Leominster, MA
	Description: Wetland 10 near flag WF B24-107






Photo #13 Wetland 11 [BSC Wetland LE-W10]	Location: Leominster, MA
	Description: Wetland 11 near flag WF B23-218
Photo #14 Wetland 12 [BSC Wetland LE-W11]	Location: Leominster, MA
	Description: Interior photo of Wetland 12
Photo #15 Stream 5	Location: Leominster, MA
	Description: Stream 5/Reservoir Brook near flag BF B10-212

Photo #16 Wetland 14 [BSC Wetland LE-W13]	Location: Leominster, MA
	Description: Interior photo of Wetland 14
Photo #17 Wetland 16 [BSC Wetland LE-W15]	Location: Leominster, MA
	Description: Wetland 16 near flag WF B19-109
Photo #18 Wetland 17 [BSC Wetland LE-W16]	Location: Leominster, MA
	Description: Interior photo of Wetland 17

Photo #19 Wetland 18 [BSC Wetland LE-W17]	Location: Leominster, MA
	Description: Interior photo of Wetland 18
Photo #20 Wetland 19 [BSC Wetland LE-W18/19]	Location: Leominster, MA
	Description: Wetland 19 near flag WF B16-117
Photo #21 Wetland 20/Fall Brook Reservoir	Location: Leominster, MA
	Description: View of Wetland 20 and Fall Brook Reservoir near flag WF B16-107




<p>Photo #22 Wetland 21 [BSC Wetland LE-W20]</p> 	<p>Location: Leominster, MA</p> <p>Description: Interior photo of Wetland 21</p>
<p>Photo #23 Wetland 22/Stream 8 [BSC Wetland LE-W21]</p> 	<p>Location: Leominster, MA</p> <p>Description: Wetland 22 and Stream 8 near flag BF S8-207</p>
<p>Photo #24 Wetland 23 [BSC Wetland LE-W23]</p> 	<p>Location: Leominster, MA</p> <p>Description: Wetland 22 near flag WF C13-13</p>




Photo #25 Wetland 24 [BSC Wetland LE-W23]	Location: Leominster, MA
	Description: Wetland 24 near flag WF C12-97
Photo #26 Stream 9	Location: Leominster, MA
	Description: Stream 9 near flag BF CS7-1
Photo #27 Wetland 25 [BSC Wetland LE-W24]	Location: Leominster, MA
	Description: Wetland 25 near flag WF C10A-13

Photo #28 Stream 10	Location: Leominster, MA
 A photograph of a narrow stream flowing through a wooded area. The water is dark and reflects the surrounding trees. The banks are lined with various trees and shrubs, some with bare branches and others with green leaves.	Description: Stream 10 near flag BF CS6-10
Photo #29 Wetland 27/Stream 11	Location: Leominster, MA
 A photograph of a wetland area with a stream. The foreground is dominated by tall green grasses and ferns. In the background, there is a large metal tower structure. A red box with the text "[BSC Wetland LE-W27]" is overlaid on the image. <p>[BSC Wetland LE-W27]</p>	Description: Wetland 27 and Stream 11 near flag BF CS5-6A
Photo #30 Wetland 29 [BSC Wetland LE-W28]	Location: Leominster, MA
 A photograph of a wetland area with a stream. The foreground is dominated by tall, thin, bare trees and shrubs. A pink ribbon is tied around one of the trees. The water is visible in the background. <p>[BSC Wetland LE-W28]</p>	Description: Wetland 29 near flag WF C7-13

Photo #31 Wetland 30 [BSC Wetland LE-W29]	Location: Leominster, MA
	Description: Interior photo of Wetland 30
Photo #32 Wetland 31	Location: Leominster, MA
	Description: Wetland 31 near flag WF C5-D15
Photo #33 Wetland 33 [BSC Wetland LE-W31]	Location: Leominster, MA
	Description: Wetland 33 near flag WF 5B-2

Photo #34 Wetland 34 [BSC Wetland LE-W33]	Location: Leominster, MA
	Description: Interior photo of Wetland 34
Photo #35 Wetland 35 [BSC Wetland LE-W34]	Location: Leominster, MA
	Description: Interior photo of Wetland 35

Sterling, Massachusetts Photographs

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Photo #1 Wetland 1 [BSC Wetland ST-W1]	Location: Sterling, MA
 A photograph showing a wetland area with dense, tall grasses and some green plants in the foreground. The background consists of a wooded area with trees.	Description: Wetland 1 near flag WF C2-3A
Photo #2 Wetland 2 [BSC Wetland ST-W2]	Location: Sterling, MA
 A photograph of a wetland area with tall, dry grasses in the foreground. In the background, there are utility poles and a building under a blue sky with some clouds.	Description: Wetland 2 near flag WF C1A-45
Photo #3 Stream 1	Location: Sterling, MA
 A photograph of a stream flowing through a wooded area. The water is dark and surrounded by dense vegetation and trees.	Description: Stream 1 near flag BF C1-12

Attachment C – Wetland Determination Data Forms

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**A1/B2 ACR Project
Wetland Determination Data Form MA**

WARWICK, MA

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) 	<ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) 	<p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
------------------------------------------------------------------------------------------------	-------------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
---------------------------------------------------------------------------------	---------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
---------------------------------------------------------------------------------	------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____
4. _____	_____	_____	_____	

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hydric Soil Indicators:
<input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8) | Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
---------------------------------------------------------------------------------	------------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed): Type: _____ Depth (inches): _____</p>	<p>Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/></p>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	Prevalence Index worksheet: _____ Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
---------------------------------------------------------------------------------	------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) 	<ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) 	<p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
------------------------------------------------------------------------------------------------	-------------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	_____ = Total Cover			
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	_____ = Total Cover			
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	_____ = Total Cover			
				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	
<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
---------------------------------------------------------------------------------	---------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
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Remarks: _____

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____				Total Number of Dominant Species Across All Strata: _____ (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
				Prevalence Index worksheet:
				_____ Total % Cover of: _____ Multiply by: _____
				OBL species _____ x 1 = _____
				FACW species _____ x 2 = _____
				FAC species _____ x 3 = _____
				FACU species _____ x 4 = _____
				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
				Hydrophytic Vegetation Indicators:
				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
				<input type="checkbox"/> Dominance Test is >50%
				<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
				<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Definitions of Vegetation Strata:
				Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
				Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
				Woody vines – All woody vines greater than 3.28 ft in height.
				Hydrophytic Vegetation Present? Yes _____ No _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				_____ = Total Cover
Herb Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				_____ = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
				_____ = Total Cover
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils³:
___ Histosol (A1)	___ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
___ Histic Epipedon (A2)	___ Coast Prairie Redox (A16) (LRR K, L, R)
___ Black Histic (A3)	___ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
___ Hydrogen Sulfide (A4)	___ Dark Surface (S7) (LRR K, L)
___ Stratified Layers (A5)	___ Polyvalue Below Surface (S8) (LRR K, L)
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9) (LRR K, L)
___ Thick Dark Surface (A12)	___ Iron-Manganese Masses (F12) (LRR K, L, R)
___ Sandy Mucky Mineral (S1)	___ Piedmont Floodplain Soils (F19) (MLRA 149B)
___ Sandy Gleyed Matrix (S4)	___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
___ Sandy Redox (S5)	___ Red Parent Material (F21)
___ Stripped Matrix (S6)	___ Very Shallow Dark Surface (TF12)
___ Dark Surface (S7) (LRR R, MLRA 149B)	___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
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Remarks: _____

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- Loamy Mucky Mineral (F1) **(LRR K, L)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- Coast Prairie Redox (A16) **(LRR K, L, R)**
- 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- Dark Surface (S7) **(LRR K, L)**
- Polyvalue Below Surface (S8) **(LRR K, L)**
- Thin Dark Surface (S9) **(LRR K, L)**
- Iron-Manganese Masses (F12) **(LRR K, L, R)**
- Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/>
---------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
<u>Tree Stratum</u> (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
<u>Herb Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
<u>Woody Vine Stratum</u> (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	_____ = Total Cover			
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	_____ = Total Cover			
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	_____ = Total Cover			
				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____

**A1/B2 ACR Project
Wetland Determination Data Form MA**

ROYALSTON, MA

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____
4. _____	_____	_____	_____	

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Herb Stratum (Plot size: _____)					Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	_____ = Total Cover			Hydrophytic Vegetation Present? Yes _____ No _____	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
	_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)

- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
<u>Tree Stratum</u> (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
<u>Herb Stratum</u> (Plot size: _____)					Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Hydrophytic Vegetation Present? Yes _____ No _____	
<u>Woody Vine Stratum</u> (Plot size: _____)					Remarks: (Include photo numbers here or on a separate sheet.)
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
------------------------------------------------------------------------------------------------	-------------------------------------------------------

Remarks: _____

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____
4. _____	_____	_____	_____	

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
------------------------------------------------------------------------------------------------	-------------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)

- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hydric Soil Indicators:
<input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8) | Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/>
---------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Remarks: _____

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: _____

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	
<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Hydric Soil Indicators: | | Indicators for Problematic Hydric Soils³: |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) | <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| <input type="checkbox"/> Sandy Redox (S5) | | <input type="checkbox"/> Red Parent Material (F21) |
| <input type="checkbox"/> Stripped Matrix (S6) | | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | | <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
---------------------------------------------------------------------------------	---------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
<u>Tree Stratum</u> (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
<u>Herb Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
<u>Woody Vine Stratum</u> (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	
Type: _____	Hydric Soil Present? Yes _____ No _____
Depth (inches): _____	

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
Remarks: _____ _____ _____ _____	

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
___ Histosol (A1)	___ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	___ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
___ Histic Epipedon (A2)	___ Thin Dark Surface (S9) (LRR R, MLRA 149B)	___ Coast Prairie Redox (A16) (LRR K, L, R)
___ Black Histic (A3)	___ Loamy Mucky Mineral (F1) (LRR K, L)	___ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
___ Hydrogen Sulfide (A4)	___ Loamy Gleyed Matrix (F2)	___ Dark Surface (S7) (LRR K, L)
___ Stratified Layers (A5)	___ Depleted Matrix (F3)	___ Polyvalue Below Surface (S8) (LRR K, L)
___ Depleted Below Dark Surface (A11)	___ Redox Dark Surface (F6)	___ Thin Dark Surface (S9) (LRR K, L)
___ Thick Dark Surface (A12)	___ Depleted Dark Surface (F7)	___ Iron-Manganese Masses (F12) (LRR K, L, R)
___ Sandy Mucky Mineral (S1)	___ Redox Depressions (F8)	___ Piedmont Floodplain Soils (F19) (MLRA 149B)
___ Sandy Gleyed Matrix (S4)		___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
___ Sandy Redox (S5)		___ Red Parent Material (F21)
___ Stripped Matrix (S6)		___ Very Shallow Dark Surface (TF12)
___ Dark Surface (S7) (LRR R, MLRA 149B)		___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
---------------------------------------------------------------------------------	------------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet:	
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)	
2. _____				Total Number of Dominant Species Across All Strata: _____ (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
4. _____				Prevalence Index worksheet:	
5. _____					_____ Total % Cover of: _____ Multiply by: _____
6. _____					OBL species _____ x 1 = _____
7. _____					FACW species _____ x 2 = _____
				FAC species _____ x 3 = _____	
				FACU species _____ x 4 = _____	
				UPL species _____ x 5 = _____	
				Column Totals: _____ (A) _____ (B)	
				Prevalence Index = B/A = _____	
				Hydrophytic Vegetation Indicators:	
					<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
					<input type="checkbox"/> Dominance Test is >50%
					<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
				<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				Definitions of Vegetation Strata:	
					Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
					Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
					Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
				Woody vines – All woody vines greater than 3.28 ft in height.	
				Hydrophytic Vegetation Present? Yes _____ No _____	
Sapling/Shrub Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
				_____ = Total Cover	
Herb Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
				_____ = Total Cover	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
				_____ = Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
------------------------------------------------------------------------------------------------	-------------------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- Loamy Mucky Mineral (F1) **(LRR K, L)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- Coast Prairie Redox (A16) **(LRR K, L, R)**
- 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- Dark Surface (S7) **(LRR K, L)**
- Polyvalue Below Surface (S8) **(LRR K, L)**
- Thin Dark Surface (S9) **(LRR K, L)**
- Iron-Manganese Masses (F12) **(LRR K, L, R)**
- Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- Loamy Mucky Mineral (F1) **(LRR K, L)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- Coast Prairie Redox (A16) **(LRR K, L, R)**
- 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- Dark Surface (S7) **(LRR K, L)**
- Polyvalue Below Surface (S8) **(LRR K, L)**
- Thin Dark Surface (S9) **(LRR K, L)**
- Iron-Manganese Masses (F12) **(LRR K, L, R)**
- Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) 	<ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) 	<p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> Type: _____ Depth (inches): _____	<p>Hydric Soil Present? Yes _____ No _____</p>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)</p>	<p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR K, L)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</p> <p><input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)</p> <p><input type="checkbox"/> Red Parent Material (F21)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) 	<ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) 	<p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> ___ Histosol (A1) ___ Histic Epipedon (A2) ___ Black Histic (A3) ___ Hydrogen Sulfide (A4) ___ Stratified Layers (A5) ___ Depleted Below Dark Surface (A11) ___ Thick Dark Surface (A12) ___ Sandy Mucky Mineral (S1) ___ Sandy Gleyed Matrix (S4) ___ Sandy Redox (S5) ___ Stripped Matrix (S6) ___ Dark Surface (S7) (LRR R, MLRA 149B) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> ___ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) ___ Thin Dark Surface (S9) (LRR R, MLRA 149B) ___ Loamy Mucky Mineral (F1) (LRR K, L) ___ Loamy Gleyed Matrix (F2) ___ Depleted Matrix (F3) ___ Redox Dark Surface (F6) ___ Depleted Dark Surface (F7) ___ Redox Depressions (F8) <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> ___ 2 cm Muck (A10) (LRR K, L, MLRA 149B) ___ Coast Prairie Redox (A16) (LRR K, L, R) ___ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) ___ Dark Surface (S7) (LRR K, L) ___ Polyvalue Below Surface (S8) (LRR K, L) ___ Thin Dark Surface (S9) (LRR K, L) ___ Iron-Manganese Masses (F12) (LRR K, L, R) ___ Piedmont Floodplain Soils (F19) (MLRA 149B) ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B) ___ Red Parent Material (F21) ___ Very Shallow Dark Surface (TF12) ___ Other (Explain in Remarks) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed): Type: _____ Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)
- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)</p>	<p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR K, L)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</p> <p><input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)</p> <p><input type="checkbox"/> Red Parent Material (F21)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
------------------------------------------------------------------------------------------------	-------------------------------------------------------------

Remarks:

**A1/B2 ACR Project
Wetland Determination Data Form MA**

ATHOL, MA

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- Loamy Mucky Mineral (F1) **(LRR K, L)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- Coast Prairie Redox (A16) **(LRR K, L, R)**
- 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- Dark Surface (S7) **(LRR K, L)**
- Polyvalue Below Surface (S8) **(LRR K, L)**
- Thin Dark Surface (S9) **(LRR K, L)**
- Iron-Manganese Masses (F12) **(LRR K, L, R)**
- Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____
4. _____	_____	_____	_____	

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)

- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____
4. _____	_____	_____	_____	

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

**A1/B2 ACR Project
Wetland Determination Data Form MA**

GARDNER, MA

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	
<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
---------------------------------------------------------------------------------	---------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (LRR R, MLRA 149B)

- ___ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ___ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ___ Loamy Mucky Mineral (F1) (LRR K, L)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ___ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Herb Stratum (Plot size: _____)					Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Hydrophytic Vegetation Present? Yes _____ No _____	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
	_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Table with columns: Depth (inches), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type¹, Loc²), Texture, Remarks.

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (LRR R, MLRA 149B)

- ___ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
___ Thin Dark Surface (S9) (LRR R, MLRA 149B)
___ Loamy Mucky Mineral (F1) (LRR K, L)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ___ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
___ Coast Prairie Redox (A16) (LRR K, L, R)
___ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
___ Dark Surface (S7) (LRR K, L)
___ Polyvalue Below Surface (S8) (LRR K, L)
___ Thin Dark Surface (S9) (LRR K, L)
___ Iron-Manganese Masses (F12) (LRR K, L, R)
___ Piedmont Floodplain Soils (F19) (MLRA 149B)
___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ___ No ___

Remarks:

**A1/B2 ACR Project
Wetland Determination Data Form MA**

WESTMINSTER, MA

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	_____	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
6. _____	_____	_____	_____	UPL species _____ x 5 = _____
7. _____	_____	_____	_____	Column Totals: _____ (A) _____ (B)
	_____	= Total Cover		Prevalence Index = B/A = _____
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
2. _____	_____	_____	_____	<input type="checkbox"/> Dominance Test is >50%
3. _____	_____	_____	_____	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
4. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	_____	= Total Cover		
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata:
1. _____	_____	_____	_____	Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
2. _____	_____	_____	_____	Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
3. _____	_____	_____	_____	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
4. _____	_____	_____	_____	Woody vines – All woody vines greater than 3.28 ft in height.
	_____	= Total Cover		
				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Herb Stratum (Plot size: _____)					Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Hydrophytic Vegetation Present? Yes _____ No _____	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
	_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <p>___ Histosol (A1)</p> <p>___ Histic Epipedon (A2)</p> <p>___ Black Histic (A3)</p> <p>___ Hydrogen Sulfide (A4)</p> <p>___ Stratified Layers (A5)</p> <p>___ Depleted Below Dark Surface (A11)</p> <p>___ Thick Dark Surface (A12)</p> <p>___ Sandy Mucky Mineral (S1)</p> <p>___ Sandy Gleyed Matrix (S4)</p> <p>___ Sandy Redox (S5)</p> <p>___ Stripped Matrix (S6)</p> <p>___ Dark Surface (S7) (LRR R, MLRA 149B)</p>	<p>___ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</p> <p>___ Thin Dark Surface (S9) (LRR R, MLRA 149B)</p> <p>___ Loamy Mucky Mineral (F1) (LRR K, L)</p> <p>___ Loamy Gleyed Matrix (F2)</p> <p>___ Depleted Matrix (F3)</p> <p>___ Redox Dark Surface (F6)</p> <p>___ Depleted Dark Surface (F7)</p> <p>___ Redox Depressions (F8)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p>___ 2 cm Muck (A10) (LRR K, L, MLRA 149B)</p> <p>___ Coast Prairie Redox (A16) (LRR K, L, R)</p> <p>___ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</p> <p>___ Dark Surface (S7) (LRR K, L)</p> <p>___ Polyvalue Below Surface (S8) (LRR K, L)</p> <p>___ Thin Dark Surface (S9) (LRR K, L)</p> <p>___ Iron-Manganese Masses (F12) (LRR K, L, R)</p> <p>___ Piedmont Floodplain Soils (F19) (MLRA 149B)</p> <p>___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)</p> <p>___ Red Parent Material (F21)</p> <p>___ Very Shallow Dark Surface (TF12)</p> <p>___ Other (Explain in Remarks)</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
------------------------------------------------------------------------------------------------	----------------------------------------------------------

Remarks: _____

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
<u>Tree Stratum</u> (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
<u>Herb Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
<u>Woody Vine Stratum</u> (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|---------------------------------------------------------------|--------------------------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | |
| <input type="checkbox"/> Sandy Redox (S5) | |
| <input type="checkbox"/> Stripped Matrix (S6) | |
| <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | |

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
---------------------------------------------------------------------------------	------------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

**A1/B2 ACR Project
Wetland Determination Data Form MA**

LEOMINSTER, MA

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)
- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
4. _____	_____	_____	_____	
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
<u>Tree Stratum</u> (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
<u>Herb Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
<u>Woody Vine Stratum</u> (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (F21)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			
<input type="checkbox"/> Sandy Redox (S5)			
<input type="checkbox"/> Stripped Matrix (S6)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No _____
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: _____)					Hydrophytic Vegetation Present? Yes _____ No _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No _____</p>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (LRR R, MLRA 149B)

- ___ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ___ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ___ Loamy Mucky Mineral (F1) (LRR K, L)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ___ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Herb Stratum (Plot size: _____)					Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	_____ = Total Cover			Hydrophytic Vegetation Present? Yes _____ No _____	
Woody Vine Stratum (Plot size: _____)					Remarks: (Include photo numbers here or on a separate sheet.)
1. _____					
2. _____					
3. _____					
4. _____					
	_____ = Total Cover				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- Loamy Mucky Mineral (F1) **(LRR K, L)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- Coast Prairie Redox (A16) **(LRR K, L, R)**
- 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- Dark Surface (S7) **(LRR K, L)**
- Polyvalue Below Surface (S8) **(LRR K, L)**
- Thin Dark Surface (S9) **(LRR K, L)**
- Iron-Manganese Masses (F12) **(LRR K, L, R)**
- Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____				Total Number of Dominant Species Across All Strata: _____ (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____				
5. _____				
6. _____				
7. _____				
				Prevalence Index worksheet:
				_____ Total % Cover of: _____ Multiply by: _____
				OBL species _____ x 1 = _____
				FACW species _____ x 2 = _____
				FAC species _____ x 3 = _____
				FACU species _____ x 4 = _____
				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
				Hydrophytic Vegetation Indicators:
				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
				<input type="checkbox"/> Dominance Test is >50%
				<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
				<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Definitions of Vegetation Strata:
				Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
				Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
				Woody vines – All woody vines greater than 3.28 ft in height.
				Hydrophytic Vegetation Present? Yes _____ No _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				_____ = Total Cover
Herb Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				_____ = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
				_____ = Total Cover
Remarks: (Include photo numbers here or on a separate sheet.)				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

**A1/B2 ACR Project
Wetland Delineation Photographs MA**

WARWICK, MA



Photo #1: View of wetland WA-W4A.



Photo #2: View of wetland WA-W4B.



Photo #3: View of wetland WA-W4C.



Photo #4: View of wetland WA-W5A.



Photo #5: View of wetland WA-W7.



Photo #6: View of wetland WA-20A.



Photo #7: View of wetland WA-W21B.



Photo #8: View of wetland WA-2.



Photo #9: View of wetland WA-W29B.



Photo #10: View of wetland WA-29D.



Photo #11: View of wetland WA-W30.



Photo #12: View of wetland WA-W31.

**A1/B2 ACR Project
Wetland Delineation Photographs MA**

ROYALSTON, MA



Photo #1: View of wetland RO-W60A on each side of ROW access road.



Photo #2: View of wetland RO-W6A near structure 204.



Photo #3: View of wetland RO-W6 looking at structure 205 in distance.



Photo #4: View of wetland RO-W9A in off ROW access road.



Photo #5: View of wetland RO-W74 in off ROW.



Photo #6: View of wetland RO-W71 in off ROW access road.



Photo #7: View of wetland RO-W68 and RO-W69 in off ROW.



Photo #8: View of wetland RO-W37B in off ROW access road.



Photo #9: View of wetland RO-W35A crossing access to Str 275.



Photo #10: View of wetland RO-W32A.

**A1/B2 ACR Project
Wetland Delineation Photographs MA**

ATHOL, MA



Photo #1: View of wetland AT-W12 on each side of ROW access road.



Photo #2: View of wetland AT-W8 near structure 46.



Photo #3: View of wetland AT-W11 that crosses off ROW access that comes out to Strs 49/50.



Photo #4: View of wetland AT-W22A.



Photo #5: View of wetland AT-W16.



Photo #6: View of wetland AT-W17.



Photo #7: View of wetland AT-W18 in access road near structures 73/74.



Photo #8: View of wetland AT-W19.



Photo #9: View of wetland AT-W20A in access road near structures 73/74.



Photo #10: View of wetland AT-W15A.



Photo #11: View of wetland AT-W15B.

**A1/B2 ACR Project
Wetland Delineation Photographs MA**

WINCHENDON, MA



Photo #1: View of wetland WI-W3A.



Photo #2: View of wetland WI-W5.

**A1/B2 ACR Project
Wetland Delineation Photographs MA**

GARDNER, MA



Photo #1: View of wetland GA-W5A near Str 414.

**A1/B2 ACR Project
Wetland Delineation Photographs MA**

WESTMINSTER, MA



Photo #1: View of wetland WE-W6A in off ROW.



Photo #2: View of wetland WE-W10.



Photo #3: View of wetland WE-W16.



Photo #4: View of wetland WE-W2A.



Photo #5: View of wetland WE-W18A.



Photo #6: View of wetland WE-W18B.

**A1/B2 ACR Project
Wetland Delineation Photographs MA**

FITCHBURG, MA



Photo #1: View of wetland FI-W2.



Photo #2: View of wetland FI-W4.



Photo #3: View of wetland FI-W5.

**A1/B2 ACR Project
Wetland Delineation Photographs MA**

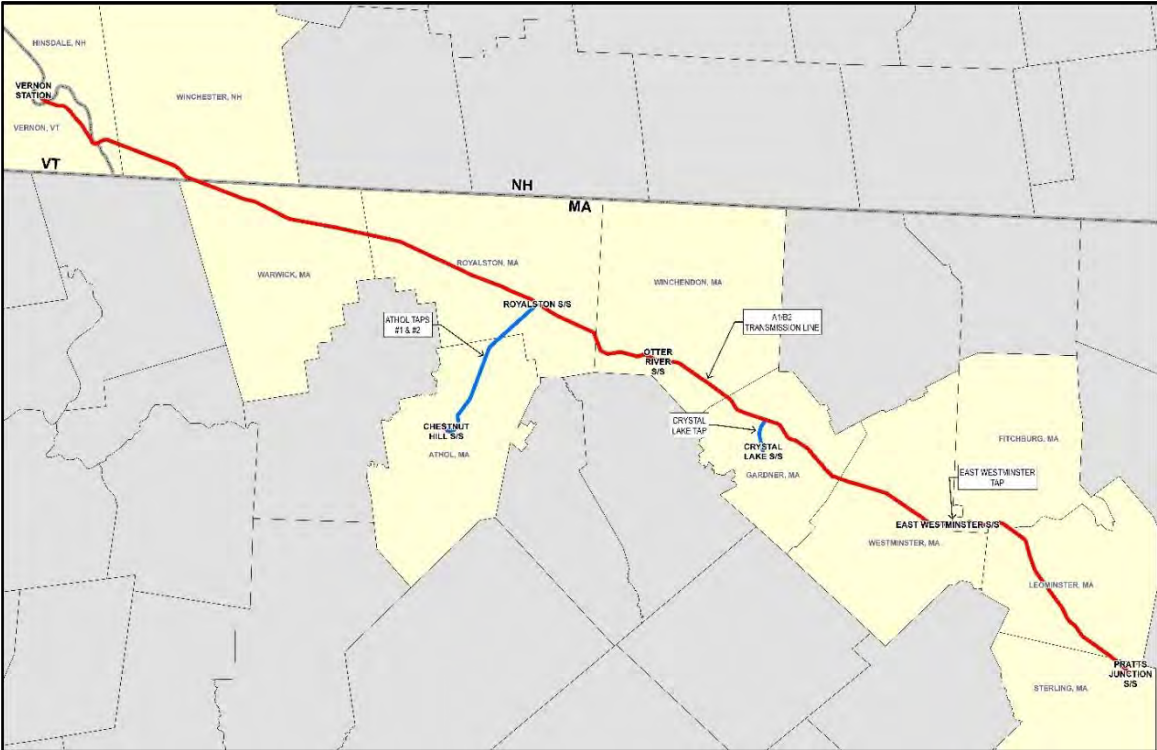
LEOMINSTER, MA



Photo #1: View of wetland LE-W2.

A1/B2 Asset Condition Refurbishment Project

Wildlife Habitat Evaluation- MA



Prepared for:
New England Power Company
40 Sylvan Road
Waltham, MA 02451

BSC Project No. 89620.66

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Appendices

Appendix A: Detailed Wildlife Habitat Evaluation Forms

ACRONYMS AND ABBREVIATIONS

ACR	Asset Condition Refurbishment
ACSS	Aluminum Conductor Steel Supported
Bank	Inland Bank
BLSF	Bordering Land Subject to Flooding
BMP	Best Management Practices
BVW	Bordering Vegetated Wetland cm centimeter
CMR	Code of Massachusetts Regulations
dbh	diameter at breast height
ft	feet
G.L.	Massachusetts General Law
ISO-NE	Independent System Operator - New England
kV	kilovolt
MassDEP	Massachusetts Department of Environmental Protection
NEP	New England Power Company
NOI	Notice of Intent
NWI	National Wetlands Inventory
OPGW	Optical Ground Wire
PEM	Palustrine Emergent
PFO	Palustrine Forested
POWER	POWER Engineers, Inc.
Project	NEP's A1/B2 Transmission Line
PSS	Palustrine Scrub-Shrub
RA	Riverfront Area
ROW	Right-of-Way
sf	square feet
USFWS	United States Fish and Wildlife Service
VMP	Vegetation Management Plan
WPA	Massachusetts Wetlands Protection Act

1.0 Introduction

New England Power Company d/b/a National Grid (NEP) is proposing to undertake the A1/B2 Transmission Line Asset Condition Refurbishment (ACR) Project (the Project) in Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling, MA to improve system reliability. This portion of A1/B2 Line was constructed between 1907 and 1910 and has a significant number of thermal and voltage violations.

The Project is part of a larger refurbishment effort that continues north and terminates at the Vernon Substation located in Vernon, Vermont. The A1/B2 Line is approximately 61.12 miles, including 54 miles of Right-of-Way (ROW) within Massachusetts. In addition to the mainline, there are three (3) tap lines, the Athol Taps 1 and 2, Crystal Lake Tap, and East Westminster Tap. The scope of the A1/B2 ACR includes refurbishment of the Athol, Crystal Lake and East Westminster Taps. In total, on the Mainline, Athol, Crystal Lake, and East Westminster taps, the proposed work consists of replacement of 808 structures, removal of 113 structures, installation of approximately 250 concrete caisson foundations, and installation of six (6) new structures. Additionally, construction of new and/or improving existing access roads, reconductoring of both circuits with 795 ACSS (Aluminum Conductor Steel Supported), installation of two (2) Optical Ground Wires (OPGWs), and relocation of the centerline is proposed. Tree removal as needed to clear the entire width of the ROW width will also be done to obtain a minimum horizontal clearance of 30-feet (38-feet without wind) to the edge of ROW/easement under all horizontal clearance weather conditions. Meeting this standard requires a cleared width of 100-ft on the mainline and the Crystal Lake Tap Line, and a 125-ft for cleared width for the Athol Tap Line.

Project impacts will consist of tree clearing within the ROW that will convert forest cover to shrub habitat, construction of work pads and access routes, structure installation, and structure removal.

2.0 Detailed Wildlife Habitat Evaluation

This document presents the results of a Wildlife Habitat Evaluation (WHE) conducted pursuant to the Massachusetts Wetland Protection Act (WPA M.G. L. ch 131 §40) Regulations addressing Wildlife Habitat Evaluations (310 CMR 10.60). The WHE was conducted following the procedures and methods detailed in the Massachusetts Department of Environmental Protection (MassDEP) Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands (Guidance, MassDEP 2006). The Project qualifies as a “limited project” (310 CMR 10.53 (3)(d)) for the construction, reconstruction, operation, and maintenance of underground and overhead public utilities such as transmission lines; under which the issuing authority (Conservation Commissions/MassDEP) is empowered with the discretion to either waive or require wildlife habitat evaluations (Guidance, MassDEP 2006). As a limited project, completion of a WHE may be required at the discretion of the issuing authority. NEP has elected to proactively undertake an Appendix B Detailed WHE for areas affected by the Project.

The analysis was undertaken because the Project exceeds review thresholds for wildlife habitat alteration under the WPA, as implemented by the Wetlands Regulations (310 CMR 10). Cumulatively, anticipated impacts to Bordering Vegetated Wetland (BVW), Bordering Land Subject to Flooding (BLSF), and Riverfront Area (RA) are greater than 2,727,727 square feet (sf) due to temporary (construction) impacts associated with construction mats and permanent wetland conversion associated with new tree removal. In addition, greater than 67,954 square feet of Inland Bank (Bank) will also be impacted.

3.0 Methods and Important Habitat Features

Field assessments for this WHE were conducted in October and November, 2022. Wildlife habitat features and characteristics defined by the MassDEP Guidance were evaluated for every wetland resource area (BVW, BLSF, RA) to be impacted by the Project. The location of the resource areas to be evaluated was assessed using desktop methods prior to the fieldwork. All resource areas that intersected areas where tree clearing and/or major grading will occur, were designated for field evaluation. These areas are collectively referred to as the Survey Area.

The current conditions of the resource areas were documented using a field data collection Application, which was designed specifically for the Project, based on the detailed data form (Form B) available with the DEP Guidance. The DEP form is designed to collect data for a discreet parcel of land and/or discreet resource areas within a parcel. The Project extends across miles of ROW, and intersects multiple resources, including intersecting the same resource in multiple locations. Therefore, the data assessment approach of Form B was modified somewhat to accommodate the expansive nature of the project area. Where multiple sites of impact would take place in a single wetland resource area, a representative site was selected to document the wildlife habitat characteristics of that wetland.

The data collected in the field is summarized in *Section 4* by Town and was also used to fill out a Form B for each resource areas evaluated. These forms are available in *Appendix A*.

4.0 Results - Current Conditions

Overall, the Survey Area, and the ROW in general, contributes to a relatively natural landscape that currently provides high quality wildlife habitat for Central Massachusetts' common, native wildlife species. The landscape surrounding the ROW is moderately developed on the eastern end of the Project area, and becomes progressively less developed as you move westward along the ROW, where it is almost entirely mature forest. The species that thrive in this landscape are adapted to variations in forest age classes. The early successional shrubby habitat provided by the current condition within the ROW is similar to other manmade and naturally occurring shrubby inclusion in Massachusetts forests, and does not detract from habitat quality for native, forest-adapted species.

The following sections include a summary of the Important Habitat Features of each resource area that was assessed, by town. The Towns of Fitchburg, Leominster, and Sterling are not included, as no tree cutting or major grading within resource areas is proposed in these Towns. For each included Town, the features present are briefly summarized and presented in a tabular format. In addition to the habitat characteristics within resource areas, the MassDEP Guidance also requires consideration of each resource area's landscape context, including its habitat continuity and connectivity, and the effects of existing habitat degradation on each resource area. These factors are also discussed in each Town's summary information.

4.1 Athol

4.1.1 Important Habitat Features

Information about Important Habitat Features was collected at a total of 21 locations along the main line and along the Athol Tap (*Table 1*). Where multiple sites of impact are proposed within a single wetland resource area, a representative site was selected to document the wildlife habitat characteristics of that wetland. In general, Oak (*Quercus sp.*), and Red Maple (*Acer rubra*) were identified as a common overstory species in the impact areas. Important resources that were common in Athol included Upland Food Plants, Small Mammal Burrows, Dense Herbaceous Cover, Coarse Woody Debris, and Rock Piles and Outcrops. A total of 89 stubs/snags of various diameters at breast height (DBH) were counted in all resource areas

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combined, with a range of 0 to 20 snags per resource area evaluated; five (5) of the 21 areas evaluated had 13 or more snags while seven (7) had none. Based on the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) classification system (Cowardin et al. 1979), wetlands present in the exiting ROW are predominately scrub-shrub wetlands (PSS) with patches of emergent (PEM) (non-woody) vegetation. Deciduous wetland forest (PFO) also exists along the edge of portions of the transmission line ROWs and at the proposed Project site in Athol.

Table 1: Existing Wildlife Habitat Features in Athol, MA

Wetland ID	Resource Area	Wetland System & Class	Physical Description	Important Resources	# of Snags	Degradation
AT-W1	RA, BVW	PEM	Flooded RFA	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	13	Moderate ATV Disturbance
AT-W2	BVW	PSS	Young to Medium Red Maple, Oak, Hemlock, White Pine	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	2	Heavy ATV Disturbance
AT-W4	BVW	PSS	Mixture of Young to Medium Hemlock, White Pine, Red Maple	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	Invasive Species
AT-W5	BVW	PSS	Lots of Snags, Mix of White Pine, Hemlock, Oak	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	13	Invasive Species
AT-W7	BVW	PSS	Forested Edge of ROW, Large Beaver Impoundment (Active)	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas	13	Moderate ATV Disturbance
AT-E8	BVW, RA	PFO	Forested ROW Edge near Beaver Impoundment	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	6	Moderate ATV Disturbance
AT-W8	BVW, RA	PEM	Large Beaver Impoundment, Minnows/Salamanders/Tadpoles/Caddisfly Larvae Noted in Pools within ROW. Forested Edges with Snags and Large Pines/Hemlocks.	Small Mammal Burrow, Rock Piles, Outcrops	15	Invasive Species
AT-W8	BVW	PEM	Forested Edge of ROW, Beaver Impoundment in Center	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas	20	Moderate ATV Disturbance
AT-W9	BVW	PFO	Forested ROW Edge	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	Moderate ATV Disturbance

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AT-W11	BVW	PSS	Forested ROW Edge, Streams Flowing South then East Along Access Road	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	Moderate ATV Disturbance
AT-W13 and AT-W12	BVW	PSS	Forested ROW Edge with Multiple Streams Flowing Southeast	Upland Food Plants, Coarse Woody Debris	0	Invasive Species, Moderate ATV Disturbance
AT-W15 and AT-W14	BVW	PSS	Forested ROW	Upland Food Plants, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	2	Heavy ATV Disturbance
AT-W15A	BVW	PSS	Forested ROW Edge, Mostly Oak	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	2	Moderate ATV Disturbance
AT-W15B	BVW	PSS	Forested ROW Edge with Stream, Flowing at Time of Inspection	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas	0	None
AT-W19	BVW	PSS	Forested ROW Edge with Stream Flowing East	Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas	2	Invasive Species, Moderate ATV Disturbance
AT-W22	BVW	PSS	Oak Overstory with Red Maple	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Open Water in Winter	0	None
AT-W23	RA	PEM	Mountain Laurel with Shrub/Oak Overstory	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	0	None
AT-S25	RA	Upland	Forested Edge of ROW along Banks of Millers River	Upland Food Plants, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	Invasive Species, Moderate ATV Disturbance
AT-S25	RA	Upland	Forested Edge of ROW on Banks of Millers River	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Open H2O in Winter, Turtle Nesting Areas, Turtle Nests	1	Invasive Species
AT-RA 87/86/85	RA	Upland	Mountain Laurel with Shrub/Oak Overstory, Grass sp Understory	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	None
AT-RA-97	RA	Upland	Oak Overstory with Grassy/Herbaceous Understory	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	None

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No aquatic food plants were observed during the wildlife habitat evaluation. The most common upland/wetland food plants were Oak trees (*Quercus*). Shrub thickets or streambeds were found in riverfront areas in BVW W23, W22 and RA 87, 86, 85, along with stream #25. No wetlands were identified to have contained a dense assemblage of native shrub species likely to provide potential nesting opportunities for the veery (*Catharus fuscenscens*). Most resource areas observed with snags were BVW W5, W2, W1, W7, W8, W15, W15A, W14, W19, and overlapping RA in E8 and S25. Dense herbaceous cover is predominately present in BVW 23, W4, W5, W2, W15B, W15A, W13, W12, W11, W19, and RA W23, W87, 86, 85; BVW and RA overlapping at BVW W1, and W8. Large woody debris on the ground was identified in all impact areas, except in BVW W7. No potential vernal pools were identified. No overhanging banks were present in the Survey Area.

4.1.2 Landscape Context

The ROW in Athol is surrounded primarily by undeveloped, mature forest lands, except at the southern end where low-density suburban neighborhoods of the Town of Athol are within 400 ft. The ROW is a shrubby habitat within an otherwise forested landscape. While it is relatively narrow, it is extensive, and thus likely does provide functional shrubby habitat for some wildlife species that depend on shrubby habitats and/or those species that prefer a diversity of forest and shrub habitats. However, it is not so wide as to create a barrier for species that are dependent on forested habitats, and it is likely simply incorporated in the home ranges of animals living the surrounding forest. Because the ROW provides a woody habitat type within a larger block of mature, undeveloped forest habitat, it likely neither functions as a movement corridor, nor impedes movement along other guiding feature, such as ridges, valleys, or waterways.

4.1.3 Habitat Degradation

The representative wetland impact areas reviewed during the wildlife habitat evaluation have all been subject to previous alterations from the current NEP ROW. However, as noted above, they continue to provide high quality wildlife habitat. In Athol, habitat degradation from the adjacent residential, commercial, and industrial lands are essentially non-existent as the ROW is buffered from these developed lands by undeveloped areas throughout most of the ROW. The primary source of degradation in the Athol are invasive plants, which were noted in seven (7) of the 21 resource areas evaluated, and all-terrain vehicle (ATV) use, which was noted in 11 of the 21 resource areas. No chemical contamination or erosion and sedimentation problems were observed within the Athol Survey Area.

4.2 Gardner

4.2.1 Important Habitat Features

In Gardner, wildlife habitat information was collected at a total of 18 locations along the main line (*Table 2*). Where multiple sites of impact would take place in a single wetland resource area, a representative site was selected to document the wildlife habitat characteristics of that wetland. In general, Red Maple, White Pine (*Pinus strobus*), Oak, and Spruce (*Picea sp.*) were identified as a common overstory species in the impact area. Important resources that were common in Gardner included Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, and Coarse Woody Debris. A total of 91 stubs/snags of various DBH were counted in all resource areas combined, varying from 0 to 20 snags per area, with one (1) area having zero snags, and three (3) areas having 10 or more snags. Based on the Cowardin et al. (1979), resources areas in the existing ROW in Gardner are predominately PSS with patches of PEM vegetation. Deciduous PFO also exists along the edge of portions of the transmission line ROW and at the proposed Project site in Gardner.

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Table 2: Existing Wildlife Habitat Features in Gardner, MA

Wetland ID	Resource Area	Wetland System & Class	Physical Description	Important Resources	# of Snags	Degradation
GA-W1	BVW	PEM	Overstory dominated by Pine and Spruce	Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	5	None
GA-W2	BVW	PFO	Overstory dominated by Pine and Spruce	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Sphagnum Hummocks/Pools	2	None
GA-W3	BVW	PSS	One (1) Mature White Pine Mixed with Medium Aged Maple and Spruce and Hemlock	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream	3	Invasive Species Present
GA-W4	BVW, RA	PSS	Maple and Pine Dominated	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Sphagnum Hummocks/Pools	5	None
GA-W5A	BVW	PSS	Tall White Pines, Young Oak, Beech, Spruce	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	0	None
GA-W6	BVW	PSS	Young White Pines on Edge, Spruce, Tamarack dominant	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Turtle Nesting Areas, Sphagnum Hummocks/Pools	20	None
GA-W7	RA, BVW	RIVERINE STREAM-BED	Mixed Trees, Beech, Oak, White Pine, Red Maple	Aquatic Food Plants, Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Rock Piles, Outcrops, Open Water in Winter, Turtle Nesting Areas	3	Invasive Species Present, Roadways Disturbance
GA-W11, GA-S11	BVW, RA	PFO	Forested ROW Edge	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	3	None
GA-W11 GA-S11	BVW	PFO	Forested ROW Edge	Upland Food Plants, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	3	None
GA-W12	RA	PSS	Tall Shite Pines, Medium Red Maple, Small Beech	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Rock Piles, Outcrops, Vernal/Autumnal Pool	2	Roadways Disturbance
GA-W18	BVW	RIVERINE UNC_SHORE	Mix of White Pine, Oak, and Red Maple on ROW Edge	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Open Water in Winter	10	None
GA-W21	RA	PSS	Red Maples Dominated by Low Growing Buckthorn	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous	3	Invasive Species Present,

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				Cover, Coarse Woody Debris, Rock Piles, Outcrops		Roadways Disturbance
GA-W35	RA	PFO	Very Small Wet Pocket	Small Mammal Burrow	0	Chemical Contamination, Roadways Disturbance
GA-W39	BVW	PFO	Young Maples and Oaks, One Mature Red Maple	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	2	Roadways Disturbance
GA-W40	BVW	PFO	Mix of White Pine, Oak, Red Maple	Upland Food Plants, Dense Herbaceous Cover, Coarse Woody Debris	1	Roadways Disturbance
	BVW	RIVERINE STREAM-BED	Thicket of Hemlock with some Oak and Red Maple	Aquatic Food Plants, Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Open H2O in Winter, Turtle Nesting Areas	3	None

Aquatic food plants were observed in BVW W7 during the WHE. The most common upland/wetland food plants were Oak trees. Several shrub thickets or streambeds were found in BVW W21, W12, RFA 433, and W18 during the habitat evaluations. One (1) wetland (BVW W3) may provide potential nesting opportunities for the veery. Most resource areas observed snags, except W35 and W5A. Dense herbaceous cover is predominately present in BVW W21, W6, W5A, W3, W39, W40; RA W433, W18, W7; BVW and RA overlapping at BVW W11 and Stream #11. Large woody debris on the ground was identified near several impact areas including BVW W21, W18, W4, W3, W2, W1, W39, W40, and RA W433, W18, W400, W11, and Stream #11. Three (3) potential vernal pools were identified in W12, RFA 433, and W3. No undercut banks were present in the Survey Area.

4.2.2 Landscape Context

The ROW in Gardner is surrounded by undeveloped, mature forest lands on the western end, and a mix of forested and low-density suburban development in the middle and eastern end of the ROW. The ROW is a shrubby habitat within a predominantly forested landscape. While it is relatively narrow, it is extensive, and thus likely does provide functional shrubby habitat for some wildlife species that depend on shrubby habitats and/or those species that prefer a diversity of forest and shrub habitats. However, it is not so wide as to create a barrier for species that are dependent on forested habitats, and it is likely simply incorporated in the home ranges of animals living the surrounding forest. Because the ROW provides a woody habitat type within a larger block of mature, undeveloped forest habitat, it likely neither functions as a movement corridor, nor impedes movement along other guiding feature, such as ridges, valleys, or waterways.

4.2.3 Habitat Degradation

The resource areas reviewed during the WHE have all been subject to previous alterations from the current NEP ROW. However, as noted above, they continue to provide high quality wildlife habitat. In Gardner, habitat degradation from the adjacent residential uses is low as the ROW is buffered from these developed lands by undeveloped areas throughout most of the ROW. Roadways associated with residential development do intersect with and influence some portions of the ROW, in the same manner the surrounding landscape is influenced by these features. Of the 18 resource areas reviewed, sources of degradation were noted in seven (7) of them, six (6) were due to roadways, three (3) were due to invasive species, and one (1) was due to apparent chemical contamination, or some combination thereof.

4.3 Royalston

4.3.1 Important Habitat Features

In Royalston, wildlife habitat information was collected at a total of 48 locations along the main line and Athol Tap, which extends from Athol into Royalston, where it joins the main line (*Table 3*). In general, young to medium White Pine, young Red Maple, and Hemlock (*Tsuga canadensis*) were identified as a common overstory species in the impact area. Important resources that were common in Royalston included upland food plants, small mammal burrow, dense herbaceous cover, and coarse woody debris. Snags were not common in this portion of the ROW and a total of only 56 stubs/snags of various DBHs were counted in all resource areas combined. Based on Cowardin et al. (1979), wetlands present in the existing ROW in Royalston are predominately PSS with patches of emergent PEM vegetation. Deciduous PFO also exists along the edge of portions of the transmission line ROW and at the proposed Project site in Royalston.

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Table 3: Existing Wildlife Habitat Features in Royalston, MA

Wetland ID	Resource Area	Wetland System & Class	Physical Description	Important Resources	# of Snags	Degradation
RO-W1	BVW	PSS	There is a Defined Stream Channel through Wetland	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	0	None
RO-W2	BVW	PSS	Wetland Confined to Slope in ROW	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	1	None
RO-W3	BVW	PSS	Stream Channel Runs through Wetland Though it's Weak	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	1	None
RO-W4	BVW	PSS	Wetland Confined to ROW, Slope Seepage, Oak, Pine off ROW.	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	1	None
RO-W4A	BVW	PSS	Oak Pine Forest. Wetland is a Seepage Sloped Wetland with Pretty FAC Community.	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	0	ATV Disturbance
RO-W6	BVW	PSS	One (1) Mature Red Maple will be Cut. Other Branches of Young Oak and Beech will be Cut in a Particular Area.	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	4	None
RO-W6	BVW, RA	PSS	Medium Aged Red Maple to be Trimmed/Cut, White Pine, Oak	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	1	Moderate Invasive Species
RO-W7	BVW	PSS	Hemlock Overstory with Oak and White Pine/ Alder Shrub	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris	0	None
RO -W10	BVW	PSS	Wetland Somewhat Confined to ROW	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris	3	None
RO-W11	BVW, RA	PSS	Young to Medium Red Maples and White Pines	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	1	Abundant Invasive Species
RO-S12	RA	PEM	Young White Pines	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas	0	Abundant Invasive Species; Moderate ATV Disturbance
RO-W12	BVW, RA	PSS	Young to Medium Aged Mixed White Pine, Hemlock, Red Maple	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	3	None
RO-W13	BVW	PSS	Young to Medium Red Maples on Edges, but Mostly Tall Shrubs of Mountain Laurel and Alder	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	0	None

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RO-W15	BVW	PSS	Young to Medium Aged Red Maple, Hemlock, Mountain Laurel, Witch Hazel	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	1	None
RO-W16A	BVW	PSS	Wetland Largely Confined to ROW.	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	1	None
RO-W17	BVW	PSS	Small Pool Caused by Deep Rut in Center Wetland. Likely vernal pool	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Vernal/Autumnal Pool	0	None
RO-W18	BVW	PSS	Wetland Confined to ROW. Impact Area only Shrubs. No Permanent Impacts.	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Vernal/Autumnal Pool, Sphagnum Hummocks/Pools	0	Moderate Invasive Species
RO-W19	RA		Steep Slope to River. ROW Mostly Clear. Small Polys in Center Must be Shrubs.	Shrub Thickets, Small Mammal Burrow	0	None
RO-W26	BVW	PSS	Young to Medium Hemlock, White Pine, Red Maple	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas	1	None
RO-W27	BVW	PSS	Medium Aged Hemlocks, Red Maple, Oaks and One (1) Yellow Birch	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas	1	None
RO-W32	BVW	PSS	Young Red Maples, Spruce	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris	0	None
RO-W35	BVW	PFO	Young Hemlocks Mixed with Medium Aged Hemlocks. Medium Aged White Pine. Some Red Maples and Some Oaks mixed in.	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	2	Moderate ATV Disturbance
RO-W36	BVW	PSS	Young Red Maple Dominant, Some Young to Medium White Pines	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Sphagnum Hummocks/Pools	0	Moderate Invasive Species; Moderate ATV Disturbance
RO-W38	BVW	PALUST-RINE UNC_BOTTOM	Recent Large Scale Beaver Activity	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	6	Moderate Invasive Species
RO-W41 RO-S41	BVW, RA	PFO	Forested ROW Edge with Large Emergent Wetlands and Standing Water from Beaver Activity Damming River	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles,	0	None

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				Outcrops, Turtle Nesting Areas, Sphagnum Hummocks/Pools		
RO-W48	BVW, RA	PFO	Hemlock Overstory with Oak and Red Maple	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris	1	Abundant Invasive Species
RO-W49	BVW	PEM	Small Number of Trees Being Cut in Wetlands Area	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	2	Abundant Invasive Species
RO-W50	BVW	PSS	Wetland Largely Confined to ROW	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Sphagnum Hummocks/Pools	4	None
RO-W51	RA,BVW	PFO	Some Large Pine. Brook Runs Through ROW North to South	Aquatic Food Plants, Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream, Flat Rocks on Bank	4	None
RO-W52	BVW	PSS	Work Area Includes Stand of Shrubs in ROW	Aquatic Food Plants, Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	0	None
RO-W54	BVW	PSS	White Pine Overstory with Oak/ Hemlock Shrubs	Upland Food Plants, Shrub Thickets, Coarse Woody Debris	2	Moderate ATV Disturbance
RO-W56	BVW	PSS	Young Red Maples and White Pines	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	0	None
RO-W57	BVW	PSS	Hemlock Dominated, Young to Medium Aged. Some Young to Medium Aged Oaks, Medium Aged Black Cherries.	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	None
RO-W58	BVW	PSS	Medium Aged Oaks, Hemlocks and Red Maples, Young Beech Trees	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	None
RO-W59	BVW	PEM	One (1) Mature Oak, Mostly Young Red Maple, White Pine and Oak	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	1	None
RO-W60	BVW	PSS	Young Red Maple, Oak and Spruce	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous	0	None

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				Cover, Coarse Woody Debris		
RO-W61	BVW	PEM	Red Maple and Hemlock	Aquatic Food Plants, Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Turtle Nesting Areas	1	Moderate Invasive Species
RO-W62	BVW	PSS	Forested on Edges with Hydrologic Connection	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Sphagnum Hummocks/ Pools	0	None
RO-W64	BVW	PSS	Forested Edge of ROW with Dense Shrubs on ROW	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	0	Moderate ATV Disturbance
RO-W67	BVW	PSS	Forested at ROW edge	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	None
RO-RFA203	RA		Mostly Young Trees, Some Medium Aged Hemlocks and White Pine, Some Young Oak and Red Maples	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream, Flat Rocks on Bank, Overhanging Banks	1	None
RFA216 (W11)	RA, BVW	PSS	At Toe of Slope Steep Hill	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris	0	Moderate Invasive Species
RO-RFA271 (W33)	RA		Mix of White Pines, Oak, Beech, and Black Cherry	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	1	Abundant Invasive Species
RO-RA272	RA		Medium Aged White Pines. Some Young Oaks.	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	3	Abundant Invasive Species
RO-RFA303	RA		Terrestrial Area with Large Beaver Dam	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	1	None

Aquatic food plants were observed in BVW W3, W51, and W61 during the wildlife habitat evaluation. The most common upland/wetland food plants were Oak trees. Shrub thickets or streambeds were found in several wetlands during the habitat evaluations including BVW W54, W3, W49, and more. No wetland was found to provide potential nesting opportunities for the veery. Majority of resource areas were observed with snags were BVW W54, W50, W38, W35, W16A, W4, W3, W2, W6, W59, W61, W10, W15, W26, W27; RA W303, W272, W271, W303 and Stream #41; and BVW and RA overlapping in W51, W48, W308, W6, W216, W12, and W11. Dense herbaceous cover is predominately present in BVW W50, W49,

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W4A, W56, W57, W58, W59, W60, W61, W67, W13, W15, W26, W27, and RA W303; BVW and RA overlapping at BVW W6, W216, W12 and W13. Large woody debris on the ground was identified near all impact areas in Royalston. Two (2) potential vernal pools were identified in BVW W17 and W18. Undercut banks were present in RFA W203.

4.3.2 Landscape Context

The main line A1/B2 ROW and Athol Tap in Royalston is surrounded primarily by expansive, undeveloped, medium-aged to mature forest lands. Roadways intersect this expansive and otherwise natural landscape in nine (9) locations. There are a very limited number of single family homes near the ROW. The ROW is a shrubby habitat within an otherwise forested landscape. While it is relatively narrow, it is extensive, and thus likely does provide functional shrubby habitat for some wildlife species that depend on shrubby habitats and/or those species that prefer a diversity of forest and shrub habitats. However, it is not so wide as to create a barrier for species that prefer forested habitats, and the ROW is likely simply incorporated in the home ranges of animals living the surrounding forest. Because the ROW provides a woody habitat type within a larger block of undeveloped forest habitat, it likely neither functions as a movement corridor, nor impedes movement along other guiding feature, such as ridges, valleys, or waterways.

4.3.3 Habitat Degradation

The resource areas reviewed during the WHE have all been subject to previous alterations from the current NEP ROW. However, as noted above, they continue to provide high quality wildlife habitat. In Royalston, habitat degradation from the adjacent residential, commercial, and industrial lands are non-existent as these land uses are not present. The primary source of degradation in the Royalston ROW are invasive plants, which were noted in 22 of the 48 resource areas evaluated, and ATV use, which was noted at five (5) of the resource areas. Of the 48 areas evaluated, 31 had no sources of degradation noted.

4.4. Warwick

4.4.1 Important Habitat Features

In Warwick, wildlife habitat information was collected at a total of 36 locations along the ROW (*Table 4*). In general, young to medium White Pine and Hemlock were identified as a common overstory species in the impact area. Important resources that were common in Warwick included upland food plants, small mammal burrow, dense herbaceous cover, coarse woody debris, rock piles, outcrops, flat rocks in stream, flat rocks on bank, overhanging banks, open water in winter, and turtle nesting areas. A total of 82 stubs/snags of various DBHs were counted in all resource areas combined, varying from 0 to 12 snags per area, with 12 areas having zero snags, and two (2) areas having 10 or more snags. Based on Cowardin et al. (1979), wetlands present within the existing ROW in Warwick are predominately PSS. Deciduous PFO also exists along the edge of portions of the transmission line ROW and at the proposed Project site in Warwick.

Table 4: Existing Wildlife Habitat Features in Warwick, MA

Wetland ID	Resource Area	Wetland System & Class	Physical Description	Important Resources	# of Snags	Degradation
WA-W1	RA, BANK, BVW	PALUSTRINE UNC_BOTTOM	RFA Slopes Steeply to Poned Area	Aquatic Food Plants, Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock	4	None

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				Piles, Outcrops, Turtle Nesting Areas		
WA-W2	BVW	PSS	Hemlock for Overstory with Red Maple	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Sphagnum Hummocks/Pools	1	None
WA-W4	BVW	PFO	Hemlock for Overstory with Red Maple	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	0	None
WA-W6	RA	RIVERINE UNC_BOTTOM	Stream Runs across ROW. Narrow Winding	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Overhanging Banks	2	None
WA-W7	BVW	PFO	Regular Forestry Activity Throughout Area	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris	2	Moderate Invasive Species
WA-W9	BVW	PFO	Seasonally Flooded	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Vernal/Autumnal Pool, Sphagnum Hummocks/Pools	1	None
WA-W10	BVW	PFO	Small Amount of Cutting Includes Large Pine and Snag	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Sphagnum Hummocks/Pools	1	Moderate Invasive Species
WA-W11	RA, BANK, BVW	PALUSTRINE UNC_BOTTOM	Beaver Pond and Associated Wetlands and RFA	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas, Turtle Nests	4	Roadway Disturbance
WA-W12	BVW	PSS	Forested ROW. Semi Permanently Flooded Bog with Cranberries in Center of ROW	Aquatic Food Plants, Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	2	None
WA-S13, WA- W13	BVW, BANK	PSS	Forested ROW Edge with Stream Flowing Across ROW. Stream has Aquatic Vegetation and is Sandy.	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream	0	Roadway Disturbance
WA- W15	BVW	PSS	Forested ROW Edge	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	0	None
WA- W16	BVW, BANK	PSS	Forested ROW Edge with Stream Running Across ROW	Upland Food Plants, Small Mammal Burrow, Rock	0	None

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				Piles, Outcrops, Bank Swallow Colony		
WA- W17 and WA S17	BVW, RA	PFO	Forested ROW Edge by Perennial Stream Flowing North	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Rock Piles, Outcrops, Flat Rocks in Stream, Turtle Nesting Areas	0	Abundant Invasive Species
WA-S17	RA	PFO	Forested Edge of ROW Near Lawn Edge	Small Mammal Burrow, Coarse Woody Debris	0	Invasive Species, Erosion/ Sedimentation
WA-W18 (RFA)	RA, BANK	RIVERINE STREAMBED	Mostly Hemlock, some Red Maple, some Shrubs in Floodplain	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream, Flat Rocks on Bank, Overhanging Banks, Open Water in Winter, Turtle Nesting Areas	0	None
WA-W20 (RFA)	RA	RIVERINE STREAMBED	Young to Medium Aged Hemlock, White Pine, Red Maple, Oak	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream, Flat Rocks on Bank, Overhanging Banks, Open Water in Winter, Turtle Nesting Areas, Turtle Nests	0	None
WA-W21	RA, BVW	RIVERINE STREAMBED	Young to Medium Aged Hemlocks, Red Maples, Beech, Oak, Large Alder	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream, Flat Rocks on Bank, Overhanging Banks, Open Water in Winter, Turtle Nesting Areas, Turtle Nests	1	Moderate ATV Disturbance
WA- W22 and Kidder Brook	BVW, RA	PFO	Eastern End of Wetlands by Kidder Brook, Forested ROW Edge	Aquatic Food Plants, Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas	4	None
WA- W22B	BVW	PSS	Forested ROW Edge	Upland Food Plants, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	2	
WA- W22C	BVW	PSS	Forested ROW Edge	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	0	None

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WA- W24	BVW	PSS	Forested ROW	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	3	Roadway Disturbance
WA-W25	BVW	PFO	Young Aged Hemlocks and Red Maples	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Sphagnum Hummocks/Pools	3	None
WA- W27, WA-S28	BVW, RA	PSS	Forested ROW Edge near Reservoir, Rocky Banks	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Open Water in Winter	6	Moderate Invasive Species
WA-W29	BVW	PFO	Forested ROW Edge near Streams Leading to Reservoir	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	6	None
WA-W29, WA-S29	BVW, RA	PFO	Forested ROW with Multiple Streams Converging on ROW, Leading to Reservoir	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Overhanging Banks, Open Water in Winter, Turtle Nesting Areas	10	Erosion/ Sedimentation
WA-W30 and W31	BVW	PFO	Forested ROW Edge	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	3	Erosion/ Sedimentation, Moderate ATV Disturbance
WA-W33 and S33	BVW	PFO	Forested ROW Edge with Stream Flowing Northeast Across ROW	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream, Flat Rocks on Bank, Overhanging Banks	3	None
WA-W35	RA, BANK, BVW	PSS	Red Maple for Overstory with White Pine	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream, Flat Rocks on Bank, Overhanging Banks, Open Water in Winter, Turtle Nesting Areas	2	None
WA-W36	BVW	PSS	Black Birch for Overstory	Upland Food Plants, Small Mammal Burrow	0	None
WA-W37	BVW, RA, BANK	PSS	Eastern Hemlock and Red Maple for Overstory with White Pine	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Flat Rocks in Stream, Flat	2	None

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				Rocks on Bank, Overhanging Banks, Open Water in Winter		
WA-W38	BVW	PSS	Eastern White Pine for Overstory and Red Maple for Midstory	Upland Food Plants, Small Mammal Burrow, Sphagnum Hummocks/Pools	1	None
WA-W40 and S40	BVW, RA	PFO	Forested ROW Edge with Perennial Stream Flowing South Across ROW, Deep and Wide Enough for Small Fish	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Turtle Nesting Areas, Sphagnum Hummocks/Pools	12	Erosion/ Sedimentation, Moderate ATV Disturbance
WA-W41	BVW	PSS	Forested ROW Edge	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	6	Moderate ATV Disturbance

Aquatic food plants were observed in BVW W1, W12 and W22 during the wildlife habitat evaluation. The most common upland/wetland food plants were Oak trees. Shrub thickets or streambeds with abundant earthworms were found in BVW W1, W6, W7, W9, W10, W17, W29, W30, W31, W33 and W35 during the habitat evaluation. No wetland provided potential nesting opportunities for the veery. Most resource areas observed with snags were BVW W1, W6, W7, W9, W10, W11, W12, W21, W22 W22B, W24, W25, W27, W29, W30, W31, W33, W38, W40, AND W41. Dense herbaceous cover is predominately present in BVW W2, W9, W10, W12, W22B, W25 and W29, and RA W6 and W20; BVW and RA overlapping at BVW W1, W21, W29 and W40. Large woody debris on the ground was identified near 18 impact areas. Two (2) vernal pools were identified in Warwick. No overhanging banks were present in the Project site.

4.4.2 Landscape Context

The A1/B2 ROW in Warwick is surrounded primarily by expansive, undeveloped, medium-aged to mature forest lands. Only one (1) primary roadway intersect this expansive and otherwise natural landscape. There are a very limited number of single family homes near the ROW, and no other development. The ROW is a shrubby habitat within an otherwise forested landscape. While it is relatively narrow, it is extensive, and thus likely does provide functional shrubby habitat for some wildlife species that depend on shrubby habitats and/or those species that prefer a diversity of forest and shrub habitats. However, it is not so wide as to create a barrier for species that are prefer forested habitats, and the ROW is likely simply incorporated in the home ranges of animals living the surrounding forest. Because the ROW provides a woody habitat type within a larger block of undeveloped forest habitat, it likely neither functions as a movement corridor, nor impedes movement along other guiding feature, such as ridges, valleys, or waterways.

4.4.3 Habitat Degradation

The resource areas reviewed during the WHE have all been subject to previous alterations from the current NEP ROW. However, as noted above, they continue to provide high quality wildlife habitat. In Warwick, habitat degradation from adjacent residential, commercial, and industrial lands is non-existent as these land uses are not present. Sources of degradation in the Survey Area in the Warwick ROW consisted of invasive plants (4 locations), ATV use (4 locations), erosion and sedimentation (3 locations) and roadway disturbance (4 locations). Of the 36 areas evaluated, 22 had no sources of degradation noted.

4.5 Winchendon

4.5.1 Important Habitat Features

In Winchendon, wildlife habitat information was collected at a total of 20 locations along the main line (*Table 5*). In general, young to medium Eastern White Pine were identified as a common overstory species in the impact area. Important resources that was common in Winchendon include: Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris. A total of 29 stubs/snags of various DBHs were counted in all resource areas combined. No location had more than five (5) snags, and five (5) had zero. Project impacts will consist of tree clearing within the ROW that will convert forest cover to shrub habitat due to construction of work pads and access routes, structure installation, and structure removal. Based on Cowardin et al. (1979), wetlands to be impacted by the Project within the existing transmission line ROWs are predominately PSS. Deciduous PFO also exists along the edge of portions of the transmission line ROWs and at the proposed Project site in Winchendon.

Table 5: Existing Wildlife Habitat Features in Winchendon, MA

Wetland ID	Resource Area	Wetland System & Class	Physical Description	Important Resources	# of Snags	Degradation
WIN-W1	BVW	PSS	Red Maple for Overstory with Eastern Hemlock	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Open Water in Winter	3	None
WIN-W3	BLSF, BVW	PSS	Eastern White Pine with Eastern Hemlock for Overstory	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Sphagnum Hummocks/Pools	2	None
WIN-W5	BVW	PSS	Eastern Hemlock for Overstory with Red Maple	Upland Food Plants, Shrub Thickets, Small Mammal Burrow	2	None
WIN-W6	BVW	PSS	Forested ROW Edge	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops	0	None
WIN-W7	BVW	PSS	Forested Edge of ROW	Upland Food Plants, Small Mammal Burrow, Dense Herbaceous Cover, Coarse Woody Debris, Rock Piles, Outcrops, Sphagnum Hummocks/Pools	3	None
WIN-W8	BVW, RA, BLSF	PFO	Red Maple for Dominant Overstory	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Open Water in Winter	1	None
WIN-W10	BANK, BVW, RA, BLSF	PSS	Eastern Hemlock for Overstory with Eastern White Pine	Small Mammal Burrow, Coarse Woody Debris, Turtle Nesting Areas	1	None
WIN-W14	BVW	PSS	Eastern White Pine for Overstory with Red Maple	Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Open Water in Winter	1	None

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WIN-W23 and WIN-S33	BVW, RA	PSS	Forested ROW Edge by River	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	1	Moderate Invasive Species
WIN-W26	BVW	PFO	White Pine for Overstory Hemlock and Red Oak	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	1	None
WIN-W28	BVW	PSS	Forested ROW Edge	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	0	None
WIN-W30	BVW	PFO	White Pine for Overstory and Hemlock Shrub	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	1	None
WIN-W31	BVW	PSS	White Pine Overstory with Red Maple	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	0	None
WIN-W33	BVW	PFO	White Pine Overstory with Red Maple	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Sphagnum Hummocks/Pools	5	None
WIN-S33	RA		Forested ROW Edge by River	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	0	Roadway Disturbance
WIN-W34	BVW	PFO	Fir for Overstory with White Pine and Hemlock	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	2	None
WIN-BLSF-346-C	BLSF		Eastern White Pine for Overstory with Red Oak	Small Mammal Burrow, Coarse Woody Debris	3	None
WIN-RFA-346-1	RA, BLSF		Eastern White Pine with Red Oak	Upland Food Plants, Shrub Thickets, Small Mammal Burrow	0	None
WIN-RFA 388	RA	PFO	Red Oak for Overstory with White Pine	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops, Open Water in Winter	3	None
WIN-RFA Beaman Brook	RA		Hemlock for Overstory with Red Maple	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris	0	Roadway Disturbance

No aquatic food plants were observed during the wildlife habitat evaluation. The most common upland/wetland food plants were Oak trees. Shrub thickets or streambeds with abundant earthworms were found in BVW W14, RFA346-1, BVW W8, W1, W3, and W5, during the habitat evaluations. No wetland may provide potential nesting opportunities for the veery. Dense herbaceous cover is predominately present in BVW W7 and W6. Large woody debris on the ground was identified near all impact areas, except in RA 246-1, and BVW W1 and W5. No potential vernal pools were identified. No undercut banks were present in the Survey Area.

4.5.2 Landscape Context

The ROW in Winchendon is surrounded by undeveloped, mature forest lands on the western end, and forest mixed with very low-density residential development in the middle and eastern end of the ROW. The ROW is a shrubby habitat within a predominantly forested landscape. While it is relatively narrow, it is extensive, and thus likely does provide functional shrubby habitat for some wildlife species that depend on shrubby

habitats and/or those species that prefer a diversity of forest and shrub habitats. However, it is not so wide as to create a barrier for species that prefer forested habitats, and it is likely simply incorporated in the home ranges of wildlife living the surrounding mix of forest and low density residential development. Because the ROW provides a woody habitat type within a larger block of predominantly forest habitat, it likely neither functions as a movement corridor, nor impedes movement along other guiding feature, such as ridges, valleys, or waterways.

4.5.3 Habitat Degradation

The resource areas reviewed in Winchendon during the WHE have all been subject to previous alterations from the current NEP ROW. However, as noted above, they continue to provide high quality wildlife habitat. Habitat degradation from adjacent residential, commercial, and industrial lands is low to non-existent as these land uses, is so far as they are even present, are largely buffered from the ROW by forest. Sources of degradation in the Survey Area in Winchendon consisted of invasive plants at one (1) location and roadway disturbance at two (2) locations of the 20 locations evaluated.

4.6 Westminster

4.6.1 Important Habitat Features

In Westminster, wildlife habitat information was collected at a total of five (5) locations along the main line (*Table 6*). In general, young to medium Eastern White Pine were identified as a common overstory species in the impact area. Important resources that were common in Westminster include: Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops. A total of 11 stubs/snags of various DBHs were counted in all resource areas combined, ranging from zero (two locations) to seven (7) (one location). Project impacts will consist of tree clearing within the ROW that will convert forest cover to shrub habitat due to construction of work pads and access routes, structure installation, and structure removal. Based on Cowardin et al. (1979), wetlands present in the existing ROW are predominately PSS with patches of PEM vegetation. Riverine wetland also exists within the vicinity of the proposed Project site in Westminster.

Table 6: Existing Wildlife Habitat Features in Westminster, MA

Wetland ID	Resource Area	Wetland System & Class	Physical Description	Important Resources	# of Snags	Degradation
WE-W1	BVW	PSS	Moderate Structure	Upland Food Plants, Shrub Thickets, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	3	None
WE-W2	BVW	PSS	Most Tree Work is to Shrubs in ROW and Oak Edge	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	0	None
WE-W3 Str 491-489	BVW	PEM	ROW Lined with 8-10" DBH Trees, Dominate Red Maple, Very Little Structure	Upland Food Plants, Shrub Thickets, Dense Herbaceous Cover, Coarse Woody Debris	0	Invasive Species
WE-RFA482	RA	RIVERINE	Oak Overstory with Hemlock	Upland Food Plants, Small Mammal Burrow, Coarse Woody Debris, Rock Piles, Outcrops	1	None

No aquatic food plants were observed during the wildlife habitat evaluation. Upland/wetland food plants were observed near or adjacent to all wetlands in the Survey Area. The most common upland/wetland food plants were Oak trees. Shrub thickets or streambeds were found in two (2) wetlands (W1 and W3) during the habitat evaluations. No wetlands were observed that could provide potential nesting opportunities for the veery. Most resource areas observed with snags were RA 484-1 to 483 and 482, along with BVW W1. Dense herbaceous cover is predominately present in BVW W3 between Structures 491-489. Large woody debris on the ground was identified near all impact areas. No potential vernal pool was identified. No undercut banks were present in the Survey Area.

4.6.2 Landscape Context

The ROW in Westminster is surrounded by mature forest lands intermixed with other land uses on the western end, and a mix of forest and low-density suburban development in the middle and eastern end of the ROW. The ROW is a shrubby habitat within a predominantly forested landscape. While it is relatively narrow, it is extensive, and thus likely does provide functional shrubby habitat for some wildlife species that depend on shrubby habitats and/or those species that prefer a diversity of forest and shrub habitats. However, it is not so wide as to create a barrier for species that prefer forested habitats, and it is likely simply incorporated in the home ranges of animals living the surrounding mix of forest and low-density residential development. Because the ROW provides a woody habitat type within a larger block of predominantly forest habitat, it likely neither functions as a movement corridor, nor impedes movement along other guiding feature, such as ridges, valleys, or waterways.

4.6.3 Habitat Degradation

The resource areas reviewed during the WHE have all been subject to previous alterations from the current NEP ROW. However, as noted above, they continue to provide high quality wildlife habitat. In Westminster, habitat degradation from adjacent residential, commercial, and industrial lands is minimal as these other land uses are largely buffered from the ROW by forest. Sources of degradation observed in the Survey Area in the Westminster consisted of invasive plants in one (1) location, and dumping in one (1) location, out of the five (5) locations observed.

5.0 Impacts and Proposed Conditions

In this section, the general impacts of the Project are summarized, followed by a brief discussion of the impacts to resource areas by town. Since the beginning of 2022, adjustments to Project design and scope have been made to accommodate Project requirements. As a result, this Wildlife Habitat Report does not fully capture the Project-related impacts to the resource areas, as the wildlife habitat evaluations were conducted in late 2021. A detailed assessment and evaluation of the recently identified impacts on these resources will be provided on the SIER.

5.1 General Impacts

Construction of the Project will result in temporary, permanent, and secondary impacts to wetland resources. Temporary impacts consist of the disturbance created by construction, including the placement of construction matting in wetlands to prevent permanent impacts. Permanent impacts consist of structure foundations that cannot avoid wetlands. Secondary impacts generally involve the conversion of forested wetland habitat to scrub shrub or emergent wetland habitat, whereby the cover type changes but results in a net-loss of wetlands.

Throughout the planning and design phases of the Project, wetland impacts have been minimized to the greatest extent possible by using an existing ROW, using existing access roads, and avoiding the placement and construction of structures and access roads in wetlands and watercourses, wherever possible. However, given the scale and landscape setting of the Project, certain wetland and watercourse resource impacts associated with the development of the Project cannot be avoided. Permanent fill will be placed in some wetlands for structure foundations.

The primary impact of the Project on the resource areas that were evaluated is tree removal which will change the cover of these areas to shrub scrub, and a loss of any snags within the tree-removal zone. However, the overall habitat structure of these areas will remain the same, i.e., a long narrow shrubby habitat bordered by a forest edge, and the shrub habitat will be only incrementally wider, relative to the expansive forested landscape that surrounds it. This change should have no impact on how resident wildlife use these habitats within the evaluated resource areas in the long term.

All existing wetlands within the Project area have been altered to some degree by maintenance of the ROW since it was constructed in the early 1900s. Temporary disturbances will continue to occur along the existing transmission line ROWs since NEP conducts a regular vegetation maintenance program of the existing transmission line ROWs. The vegetation maintenance cycle follows a four- to five-year timeline. NEP's ROW vegetation maintenance practices encourage the growth of low growing shrubs and other vegetation which provide a degree of natural vegetation control. Vegetation management is necessary to ensure the reliable and safe delivery of electric services to NEP customers and will continue to occur in accordance with National Grid's 2019-2023 Vegetation Management Plan (VMP), which is in compliance with the Massachusetts Rights-of-Way Management regulations (333 CMR 11.00) administered by the Massachusetts Department of Agricultural Resources.

Wildlife currently using the forested proposed Project parcels, and the forested edge of the segment of the A1/B2 Transmission Line and associated tap ROWs proposed to be widened, will be temporarily impacted by construction of the Project, but large blocks of intact woodland will continue to remain along both sides of the ROW corridor. Larger, more mobile species such as white-tailed deer (*Odocoileus virginianus*) are expected to temporarily relocate from the construction area but are unlikely to be permanently impacted by the displacement. Small mammals such as gray squirrels (*Sciurus carolinensis*), woodchucks (*Marmota monax*), skunks (*Mephitis mephitis*) and raccoons (*Procyon lotor*), and some herpetofauna are also likely to

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move away from areas of construction activity. Small, low mobility animals (e.g., red-backed salamander, eft of the stern newt, mice, etc.) may not be able to move out harm's way during construction and may be killed. However, this effect is not expected to have population level impact on any of these common species, and once construction is complete, these small species are expected to re-populate any area that they were moved from. Depending upon the time of year, some avifauna may also be temporarily displaced, possibly impacting breeding and nesting activities, but are otherwise likely to return after construction and in subsequent years.

5.2 Town Specific Impacts

In this section, an anticipated temporary and permanent impacts is described associated with the constructions of matting, tree removal, new or/and re-establishment of access, fill for structures in each resource areas by town.

A total of 57 acres of temporary impacts associated with construction matting is anticipated from the Project. Similarly, a total of approximately 367 acres of permanent impacts is proposed. Out of which, 150.5 acres, 61,393 LF (11 acres), 12,087 SF (0.3 acres), and 205 acres permanent impacts associated with tree clearing, new or/and re-establishment of access roads, structures, and cut/fill is anticipated from the Project within MA, respectively. Tree removal will not result in a loss of overall wetland habitat, but rather create a change in habitat type, from forested to scrub-shrub or emergent wetland. However, this may be a beneficial change. Below is a summary of both permanent and temporary impacts classified by resource areas in each town.

5.2.1 Athol

In Athol, a total of approximately 8 acres of temporary impacts associated with construction matting is anticipated. Similarly, approximately 40.13 acres of permanent impact is proposed. Out of which, 14 acres are impacts from tree removal, 11,233 LF (2 acres) from new or/and re-establishment of access, 5,688 SF (0.13 acres) from fill for structures and 24 acres from cut/fill.

Table 7. Summary of temporary and permanent impacts in each resource area in Athol

Resources Areas	Temporary Impacts	Permanent Impacts			
	Matting	Tree Removal	Access Road Establishment/Re-establishment	Caisson Foundation	Cut/Fill and Retaining Walls (acres)
BVW	8	1.6	N/A	869	0
Buffer Zone	1	4.8	8,470	3,160	9
Riverfront Area	0	1.0	1,583	1,106	3
BLSF	0	0.0	0	0	0
RA overlaps with BVW	1	0.3	N/A	237	0
RA overlaps with BLSF	0	0.0	0	0	0
RA overlaps with BZ	0	1.4	1,085	316	2
RA overlaps with BZ and BLSF	0	0	94	0	0
BZ and BLSF	0	0	0	0	0

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5.2.2 Gardner

In Gardner, a total of approximately 12 acres of temporary impacts associated with construction matting is anticipated. Similarly, approximately 63.55 acres of permanent impact is proposed. Out of which, 32 acres are impacts from tree removal, 8,498 LF (1.5 acres) from new or/and re-establishment of access, 2,212 SF (0.05 acres) from fill for structures and 30 acres from cut/fill.

Table 8. Summary of impacts in each resource area in Gardner

Resources Areas	Temporary Impacts	Permanent Impacts			
	Matting	Tree Removal	Access Road Establishment/Re-establishment	Caisson Foundation	Cut/Fill and Retaining Walls
BVW	12	3.6	N/A	869	0
Buffer Zone	1	10	7004.14	3,160	9
Riverfront Area	0	0.3	165.8	1,106	0
BLSF	0	0	0	0	0
RA overlaps with BVW	2	0.6	N/A	237	0
RA overlaps with BLSF	0	0	0	0	0
RA overlaps with BZ	0	1.7	1191.57	316	2
RA overlaps with BZ and BLSF	0	0	0	0	0
BZ and BLSF	0	0.2	135.99	0	0

5.2.3 Royalston

In Royalston, a total of approximately 18 acres of temporary impacts associated with construction matting is anticipated. Similarly, approximately 102.77 acres of permanent impact is proposed. Out of which, 40.5 acres are impacts from tree removal, 17,415 LF (3.19 acres) from new or/and re-establishment of access, 2,765 SF (0.06 acres) from fill for structures and 59 acres from cut/fill.

Table 9. Summary of impacts in each resource area in Royalston

Resources Areas	Temporary Impacts	Permanent Impacts			
	Matting	Tree Removal	Access Road Establishment/Re-establishment	Caisson Foundation	Cut/Fill and Retaining Walls
BVW	18	3.9	N/A	869	0
Buffer Zone	2	14	13642	3,160	19
Riverfront Area	0	0.5	396	1,106	1

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BLSF	0	0.2	1508	0	1
RA overlaps with BVW	2	0.4	N/A	237	0
RA overlaps with BLSF	0	0	252	0	0
RA overlaps with BZ	1	1.5	974	316	1
RA overlaps with BZ and BLSF	0	0.1	296	0	0
BZ and BLSF	0	0.5	346	0	1

5.2.4 Warwick

In Warwick, a total of approximately 7 acres of temporary impacts associated with construction matting is anticipated. Similarly, approximately 70 acres of permanent impact is proposed. Out of which, 25 acres are impacts from tree removal, 13,897 LF (2.55 acres) from new or/and re-establishment of access, 711 SF (0.02 acres) from fill for structures and 42 acres from cut/fill.

Table 10. Summary of impacts in each resource area in Warwick

Resources Areas	Temporary Impacts	Permanent Impacts			
	Matting	Tree Removal	Access Road Establishment/Re-establishment	Caisson Foundation (SF)	Cut/Fill and Retaining Walls
BVW	7	1	N/A	79	0
Buffer Zone	1	5.7	9024	158	9
Riverfront Area	0	1.5	1729	79	3
BLSF	0	0.1	0	0	0
RA overlaps with BVW	0	0.4	N/A	79	0
RA overlaps with BLSF	0	0	0	0	0
RA overlaps with BZ	0	3.3	3021	316	5
RA overlaps with BZ and BLSF	0	0.1	57	0	0
BZ and BLSF	0	0.0	66	0	0

5.2.5 Winchendon

In Winchendon, approximately 5 acres of temporary impacts associated with construction matting is anticipated. Similarly, approximately 55.46 acres of permanent impact is proposed. Out of which, 23 acres are impacts from tree removal, 7,901 LF (1.45 acres) from new or/and re-establishment of access, 316 SF (0.01 acres) from fill for structures and 31 acres from cut/fill.

Table 11. Summary of impacts in each resource area in Winchendon

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Resources Areas	Temporary Impacts	Permanent Impacts			
	Matting	Tree Removal	Access Road Establishment/Re-establishment	Caisson Foundation (SF)	Cut/Fill and Retaining Walls
BVW	5	1.6	N/A	0	0
Buffer Zone	0	5	5600	79	6
Riverfront Area	0	0.5	70	79	1
BLSF	0	0.2	733	79	1
RA overlaps with BVW	0	0.1	N/A	0	0
RA overlaps with BLSF	0	0.1	495	79	0
RA overlaps with BZ	0	0.9	262	0	1
RA overlaps with BZ and BLSF	0	0.4	323	0	1
BZ and BLSF	0	0.1	417	0	1

5.2.6 Westminster

In Westminster, a total of approximately 7 acres of temporary impacts associated with construction matting. Similarly, approximately 36.45 acres of permanent impact is proposed. Out of which, 16 acres are impacts from tree removal, 2449 LF (0.44 acres) from new or/and re-establishment of access, 395 SF (0.01 acres) from fill for structures and 20 acres from cut/fill.

Table 12. Summary of impacts in each resource area in Westminster

Resources Areas	Temporary Impacts	Permanent Impacts			
	Matting	Tree Removal	Access Road Establishment/Re-establishment	Caisson Foundation (SF)	Cut/Fill and Retaining Walls
BVW	7	2.0	N/A	0	0
Buffer Zone	1	3.4	2130	0	3
Riverfront Area	0	0.4	198	0	0
BLSF	0	0	0	0	0
RA overlaps with BVW	0	0	N/A	0	0
RA overlaps with BLSF	0	0	0	0	0
RA overlaps with BZ	0	0.7	122	158	1
RA overlaps with BZ and BLSF	0	0	0	237	0
BZ and BLSF	0	0	0	0	0

6.0 Avoidance, Minimization, and Mitigation

6.1 Impact Avoidance and Minimization

Best management practices (BMPs), as detailed in National Grid's Environmental Guidance Document EG-303NE, will be employed to minimize disturbances to wetlands during construction of the Project, and are described below.

6.1.1 Structures

Specific measures will be taken when replacing, removing, and installing structures. Temporary soil erosion controls will be installed around structure work sites in or near wetlands to minimize the potential for soil erosion and sedimentation. All soil erosion and sediment controls and other applicable construction BMPs will be inspected and maintained on a routine basis. Grading in wetlands will be limited for structure foundations. Construction mats will be used in wetlands to provide a safe workspace. Spoil piles will be placed in uplands, where possible, or contained within metal mud boxes on construction mats in wetlands.

Mat bridges or other bridging techniques will be used to span streams where necessary. Temporary bridging installation will be avoided during peak flows or when the waterway to be crossed is above bankfull width conditions, with the exception of emergency situations or other unforeseen circumstances. If water is present at the time of construction, the ambient water flow will be maintained, and water flows will not be constrained or interrupted at any time during construction. In addition, controls will be installed to prevent or minimize turbidity and sediment loading into watercourses. These controls may include the use of crushed stone approach aprons onto mat bridges, stone check dams, water bars, diversion channels, soil erosion controls, turbidity curtains, and floating booms. Existing riparian zone vegetation will also be maintained, to the extent feasible, along the banks of the stream.

6.1.2 Access Roads

Existing access roads will be used to the extent practicable during the construction phase of the Project to minimize access through wetlands. Where access roads must be improved or developed in certain sections, the roads will be designed, where practical, so as not to interfere with surface water flow or the functions of the wetland. Temporary construction matting or geotextile and stone pads for access roads across wetlands will be installed to avoid safe passage through the wetlands. The type of stabilization measures to be used in wetlands will depend on soil saturation and depth of organic matter. All temporary access roads through wetlands will be restored following the completion of installation activities by removing the construction mats, re-grading the area to pre-construction elevations to the extent practicable, and re-vegetating the wetlands.

6.1.3 Construction Areas

The size, shape, location, and configuration of work pads were evaluated to minimize impacts to wetlands and watercourses to the extent feasible. Temporary construction matting or geotextile and stone pads for work pads will be placed on the existing wetland vegetation where wetland impacts could not be avoided. The type of work pad material chosen will depend upon soil saturation and depth of organic matter in the wetland. Temporary construction matting and other possible construction area materials will be removed upon completion of the Project. Wetlands will be restored to preconstruction configuration and elevations to the extent practicable. Vegetation will also be restored within the wetland through native seeding.

6.1 Anticipated Temporary Habitat Impacts and Mitigation

As noted above, wildlife currently using the ROW and forested edge of the Project area will be temporarily impacted by construction disturbance for Project. Disturbance is an unavoidable consequence of construction. Once the disturbance of active construction ceases, wildlife is expected to return to the ROW and continue using the habitats present in the same manner as they were used prior to construction. The overall habitat structure of these areas will remain the same, i.e., a long narrow shrubby habitat bordered by a forest edge, and the shrub habitat will be only incrementally wider, relative to the expansive forested landscape that surrounds it. This change should have no impact on how resident wildlife use these habitats within the evaluated resource areas in the long term.

6.2 Anticipated Permanent Habitat Impacts and Mitigation

The removal of mature trees in forested areas of the proposed Project and the forested edge of the segment of the ROWs may provide improved habitat for species that prefer shrub land, emergent, or open habitats to those that inhabit forested communities. Based on published literature, the creation of additional shrub lands can represent a long-term positive effect on disturbance and shrub-dependent avian species, as well as species from other trophic levels such as bees and butterflies, since shrub land habitat is otherwise declining in New England. A study conducted in the Northeast region from northern Connecticut into southern New Hampshire along a powerline corridor indicated an increase in early successional plant and wildlife usage of powerline corridors following removal of trees from ROWs (Wagner et al. 2014). Another study in western Massachusetts found transmission line corridors provided habitat for shrub land birds of high regional conservation priority (King et al. 2009).

Vegetation removal for the Project will be conducted using mechanized methods. Where removal of woody vegetation is required, vegetation will be cut flush with the ground surface to the extent possible. Where practical, trees will be felled parallel to the ROW to minimize the potential for off-ROW vegetation damage. In areas where trees will be cleared there are several mitigation activities which can be performed to enhance wildlife habitat as a result of tree loss. Such activities may include planting native shrub species for cover and food, the seeding of herbaceous wildlife food sources, placing woody debris and stone piles to create cover for wildlife, and leaving snag trees as potential wildlife habitat.

6.3 Wetland and Compensatory Floodplain Mitigation

Compensation for the permanent loss of wetlands and BLSF is still in the preliminary planning phase of the Project. Consultation will occur with state and federal agencies, as well as with all the Town Conservation Commissions that the ROW passes through to develop wetland mitigation plans that counteract wetland loss as a result of the Project. Compensatory wetland mitigation options for the Project may include wetland replication and/or enhancement along the Project Area, wetlands creation (on- or off-ROW), wetlands preservation, the Massachusetts Department of Fish and Game In-Lieu Fee Program and/or placement of conservation restrictions to preserve open spaces. NEP will work with the all the Town Conservation Commissions in Athol, Royalston, Winchester, Winchendon, Warwick, and Gardner to develop a mitigation plan for the loss of BLSF associated with the installation of structure foundations.

7.0 Conclusion

All resource areas that were assessed by the WHE within the Survey Area provide wildlife habitat functions including providing food, shelter, migration, breeding, and overwintering areas for wildlife. Important wildlife habitat characteristics identified within the Survey Area include:

- Wetland/aquatic food plants
- Upland/wetland food plants (hard mast and fruit)
- Shrub vegetation suitable for veery nesting
- Standing dead tree (snag)
- Dense herbaceous cover
- Large woody debris on ground
- Tree roots under water's surface
- Live or dead standing vegetation overhanging water or offering good visibility of open water
- Depressions that may serve as vernal pools
- Standing water present at least part of the growing season
- Undercut or overhanging banks
- Turtle nesting areas
- Persistent emergent wetland present (flooded > 5 cm)
- Persistent emergent wetland present (flooded > 25 cm)
- Perennial and intermittent streams
- Areas likely to have open water in winter

Alterations to wetland resource areas (which include BVW, BLSF, RA) which have impacts above the thresholds permitted under the WPA are only permitted if the impacts will have no adverse impact on wildlife habitat. *Adverse effects on wildlife habitat mean the alteration of any habitat characteristic listed in 310 CMR 10.60(2), insofar as such alteration will, following two growing seasons of project completion and thereafter (or, if a project would eliminate trees, upon the maturity of replanted saplings) substantially reduce its capacity to provide the important wildlife habitat functions listed in 310 CMR 10.60(2). Such performance standard, however, shall not apply to the habitat of rare species which are covered by the performance standards established under 310 CMR 10.59.*

There are no adverse effects on wildlife habitat resource areas within the Survey Area. Wildlife habitat within or adjacent to the Project will not be substantially reduced in their function to serve as valuable sources of wildlife habitat in an area. In the areas of proposed tree clearing, where forest habitat will be converted to scrub-shrub and emergent habitats, wildlife will still be able to use the area along the transmission line ROWs. For resource areas lost as a result of the proposed Project, the proper mitigation measures will be taken to compensate for the loss in wildlife habitat.

With few exceptions, all inland wetland resource areas are presumed significant for protection of wildlife habitat. This presumption is predicated on a statutory definition that requires the presence of characteristics providing important wildlife habitat functions such as food, shelter, migratory and over-wintering areas, or breeding areas.

NEP has identified important habitat features and will incorporate appropriate measures to avoid and/or minimize and mitigate adverse impacts. The proposed alterations will not substantially reduce the long-term capacity of the site to provide food, cover, migratory, and breeding areas, especially when viewed in terms of conversion of habitat types. While the habitat functions associated with forested wetland will be lost due to tree removal in these localized areas, they will be replaced by the habitat functions of the scrub-

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shrub habitat type. Also, other mitigation will be identified and implemented to compensate for loss in wildlife habitat. Therefore, the goal of no adverse effect will be met for the impact areas evaluated as part of this wildlife habitat evaluation.

Appendix A

DETAILED WILDLIFE HABITAT EVALUATION FORMS AND PHOTOGRAPHS

Appendix A

ATHOL, MA WHE FORMS



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		1092	10580	11672 sq. ft.
2. Permanent (roads)			206	206 linear ft.
3. Permanent (cut/fill)			5861	5861 sq. ft.
4. Temporary (matting)		2807	1792	4599 sq.ft.
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT_W1: BVW, RA Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/12/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Emergent Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------------|-------------------------------------------------|
| <input checked="" type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Flooded RFA

Physical Description



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Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 40 0 20 50
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (20%)		
Overstory	Hemlock (80%)		
Overstory	Oak (10%)		
Overstory	Red Maple (10%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained
Fine sandy loam	Drainage Class
Texture (upper part)	64
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



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Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>10</u>	<u>3</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		8163		8163 sq. ft.
2. Temporary (matting)		22618		22618 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W2: BVW, RA Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/12/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young to medium red maple, oak, hemlock, white pine

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 70 Shrubs (< 20') 0 Woody vines 20 Mosses 90 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (70%)		
Overstory	Hemlock (20%)		
Overstory	Red Maple (10%)		
Understory	Grasses, sedges, fern (80%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2(C) SOILS
PROJECT LOCATION: ATHOL, W2**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Montauk-Scituate-Canton association, 3 to 15 percent slopes, extremely stony	Moderately well drained	56	Gravelly very fine sandy loam	0
Charlton-Chatfield association, 3 to 15 percent slopes, extremely stony	Well drained	76	Fine sandy loam	0
Ridgebury-Whitman association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Sandy Loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		5926		5926 sq. ft.
2. Temporary (matting)		2941		2941 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W4: BVW, RA Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/11/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

mixture of young to medium hemlock, white pine, red maple

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 90 Shrubs (< 20') 0 Woody vines 90 Mosses 60 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (50%)		
Overstory	Hemlock (30%)		
Overstory	Red Maple (20%)		
Unknown Shrub	Shrub (40%)		
Understory	Sphagnum (80%)		

C. Inventory (Soils)

Charlton-Chatfield association, 3 to 15 percent slopes, extremely stony	Well Drained
Fine sandy loam	Drainage Class
Texture (upper part)	76
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

 6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

 >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		9620		9620 sq. ft.
2. Temporary (matting)		27971		27971 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W5: BVW, RA Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/11/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

lot of snags, mix of white pine, hemlock, oak

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 70 Shrubs (< 20') 0 Woody vines 90 Mosses 70 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Hemlock (50%)		
Overstory	Oak (20%)		
Shrub	Buckthorn (50%)		
Understory	Sphagnum (90%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

 6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

 >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
(turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
10.0 acres in size? Yes No
25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
100 acres in size? Yes No
250 acres in size? Yes No
500 acres in size? Yes No
- (grassland nesting birds) > 1.0 acre in size? Yes No
(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2(C) SOILS
PROJECT LOCATION: ATHOL, W5**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Ridgebury-Whitman association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Sandy Loam	0
Charlton-Chatfield-Hollis association, 15 to 45 percent slopes, very rocky	Well drained	66	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		5495		5495 sq. ft.
2. Temporary (matting)		23214		23214 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W7: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/12/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------------|-------------------------------------------------|
| <input checked="" type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested edge of ROW, large beaver empoundment (active)

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 50 Shrubs (< 20') 0 Woody vines 30 Mosses 50 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (50%)		
Overstory	White Pine (30%)		
Overstory	Hemlock (30%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

8 4 1 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2(C) SOILS
PROJECT LOCATION: ATHOL, W7**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Montauk-Scituate-Canton association, 3 to 15 percent slopes, extremely stony	Moderately well drained	56	Gravelly very fine sandy loam	0
Ridgebury-Whitman association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Sandy Loam	0
Charlton-Chatfield-Hollis association, 15 to 45 percent slopes, very rocky	Well drained	66	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

ASSOCIATED RESOURCE AREAS COMBINED TOTAL
PROJECT LOCATION: ATHOL, AT-W8, AT-E8, AT RA 87/86/85
 SEE INDIVIDUAL APPENDIX B FORMS

www.bscgroup.com

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (structures)			158	158 sq. ft.
Permanent (tree removals)		12,828	12,166	24,994 sq. ft.
Permanent (roads)			141	141 linear ft.
Permanent (cut/fill)			25,580	25,580 sq. ft.
Temporary (matting)		49,116	147	49,263 sq. ft.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		12828		12828 sq. ft.
2. Temporary (matting)		48535		48535 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W8: BVW, RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/12/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Emergent Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------------|-------------------------------------------------|
| <input checked="" type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

large beaver impoundment, minnows/salamanders/tadpoles/cadisyfly larvae noted in pools within ROW. Forested edges with snags and large pines/hemlocks



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 50 Mosses 70 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (70%)		
Overstory	White Pine (30%)		

C. Inventory (Soils)

See attachment Soil Survey Unit Drainage Class
Texture (upper part) Depth
Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>10</u>	<u>5</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

DETAILED WILDLIFE HABITAT EVALUATION
PART 2(C) SOILS
PROJECT LOCATION: ATHOL, W8

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Montauk-Scituate-Canton association, 3 to 15 percent slopes, extremely stony	Moderately well drained	56	Gravelly very fine sandy loam	0
Ridgebury-Whitman association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Sandy Loam	0
Charlton-Chatfield-Hollis association, 15 to 45 percent slopes, very rocky	Well drained	66	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Combined with impacts on AT-W8.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1.				
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-E8: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/12/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Emergent Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------------|-------------------------------------------------|
| <input checked="" type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested edge of ROW, beaver empoundment in center

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 30 Mosses 30 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (60%)		
Overstory	White Pine (30%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>15</u>	<u>5</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

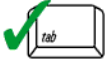


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	_____	_____	<u>12166</u>	<u>12166 sq. ft.</u>
<u>2. Permanent (structures)</u>	_____	_____	<u>158</u>	<u>158 sq. ft.</u>
<u>3. Permanent (roads)</u>	_____	_____	<u>140</u>	<u>140 linear ft.</u>
<u>4. Permanent (cut/fill)</u>	_____	<u>581</u>	<u>147</u>	<u>728 sq. ft.</u>
<u>5. Temporary (matting)</u>	_____	<u>581</u>	<u>147</u>	<u>728 sq. ft.</u>
<u>6.</u>	_____	_____	_____	_____
<u>7.</u>	_____	_____	_____	_____

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

ATRA 87/86/85: BVW, RA Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/6/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No Precipitation

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: _____ Subsystem: _____

Class: _____ Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{15}{\text{Trees (> 20')}$ $\frac{25}{\text{Shrubs (< 20')}$ $\frac{3}{\text{Woody vines}}$ $\frac{0}{\text{Mosses}}$ $\frac{70}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Shrub	Mountain Laurel (30%)		
Understory	Grass sp (30%)		
Overstory	Oak (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

 6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

 >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		2582		2582 sq. ft.
2. Temporary (matting)		2141		2141 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W9: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/16/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Forest Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}$ $\frac{40}{\text{Shrubs (< 20')}$ $\frac{0}{\text{Woody vines}}$ $\frac{80}{\text{Mosses}}$ $\frac{40}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (60%)		
Midstory	White Pine (30%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2(C) SOILS
PROJECT LOCATION: ATHOL, W9**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Montauk-Scituate-Canton association, 3 to 15 percent slopes, extremely stony	Moderately well drained	56	Gravelly very fine sandy loam	0
Charlton-Chatfield-Hollis association, 15 to 45 percent slopes, very rocky	Well drained	0	Slightly decomposed plant material	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

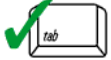


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		599		599 sq. ft.
2. Temporary (matting)		4021		4021 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W11: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/16/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshub Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW edge, streams flowing south then east along access road

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 40 Mosses 40 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Oak (50%)		
Overstory	White Pine (30%)		

C. Inventory (Soils)

Charlton-Paxton association, 15 to 45 percent slopes, extremely stony Well drained
 Slightly decomposed plant material Drainage Class
 Texture (upper part) 0
 Depth to Water Table 0 Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	<u> </u>	<u>332</u>	<u> </u>	<u>332 sq. ft.</u>
<u>2. Temporary (matting)</u>	<u> </u>	<u>805</u>	<u> </u>	<u>805 sq. ft.</u>
<u>3.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>4.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>5.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>6.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>7.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


 Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
 Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W12 and W13: BVW Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/16/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 50 0 30 60
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “**” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
<u>Overstory</u>	<u>White Pine (60%)</u>	<u> </u>	<u> </u>
<u>Overstory</u>	<u>Oak (20%)</u>	<u> </u>	<u> </u>
<u>Overstory</u>	<u>Red Maple (10%)</u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

C. Inventory (Soils)

<u>Charlton-Paxton association, 15 to 45 percent slopes, extremely stony</u>	<u>Well drained</u>
<u>Slightly decomposed plant material</u>	<u>Drainage Class</u>
<u>Texture (upper part)</u>	<u>0</u>
<u>0</u>	<u>Depth</u>
<u>Depth to Water Table</u>	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

ASSOCIATED RESOURCE AREAS INDIVIDUAL TOTALS
PROJECT LOCATION: ATHOL, AT-W12 AND W13
 SEE AT-W12 AND W13 APPENDIX B FORM

www.bscgroup.com

AT-W12 IMPACTS

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (tree removals)		332		332 sq. ft.

AT-W13 IMPACTS

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Temporary (matting)		805		805 sq. ft.



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	_____	<u>1034</u>	_____	<u>1034 sq. ft.</u>
<u>2. Temporary (matting)</u>	_____	<u>1616</u>	_____	<u>1616 sq. ft.</u>
<u>3.</u>	_____	_____	_____	_____
<u>4.</u>	_____	_____	_____	_____
<u>5.</u>	_____	_____	_____	_____
<u>6.</u>	_____	_____	_____	_____
<u>7.</u>	_____	_____	_____	_____

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W14 & W15: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/16/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrubshub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{80}{\text{Trees (> 20')}} \quad \frac{50}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{40}{\text{Mosses}} \quad \frac{40}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “**” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (60%)		
Overstory	Red Maple (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

ASSOCIATED RESOURCE AREAS INDIVIDUAL TOTALS
PROJECT LOCATION: ATHOL, AT-W14 AND W15
SEE AT-W14 AND W15 APPENDIX B FORM

www.bscgroup.com

AT-W14 IMPACTS

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (tree removals)		455		332 sq. ft.
Temporary (matting)		619		619 sq. ft.

AT-W15 IMPACTS

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (tree removals)		579		579 sq. ft.
Temporary (matting)		997		997 sq. ft.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		1303		1303 sq. ft.
2. Temporary (matting)		8409		8409 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W15A: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/16/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshub Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW edge with stream, flowing at time of inspection

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{80}{\text{Trees (> 20')}} \quad \frac{10}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{50}{\text{Mosses}} \quad \frac{80}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (70%)		

C. Inventory (Soils)

Woodbridge-Paxton association, 3 to 15 percent slopes, extremely stony	Moderately well drained
Gravelly fine sandy loam	Drainage Class
Texture (upper part)	38
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		6298		6298 sq. ft.
2. Temporary (matting)		14705		14705 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W15B: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/16/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Emergent Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW edge with stream, flowing at time of inspection

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 50 Mosses 50 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (70%)		
Overstory	White Pine (10%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2(C) SOILS
PROJECT LOCATION: ATHOL, W15B**

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Woodbridge-Paxton association, 3 to 15 percent slopes, extremely stony	Moderately well drained	38	Gravelly fine sandy loam	0
Woodbridge fine sandy loam, 3 to 8 percent slopes	Moderately Well drained	46	Sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		6151		6151 sq. ft.
2. Temporary (matting)		14393		14393 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W19: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/16/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge with stream flowing east

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 50 Shrubs (< 20') 0 Woody vines 40 Mosses 40 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (35%)		
Overstory	Red Maple (35%)		

C. Inventory (Soils)

<u>Paxton fine sandy loam, 8 to 15 percent slopes</u> Soil Survey Unit	<u>Well drained</u> Drainage Class
<u>Fine sandy loam</u> Texture (upper part)	<u>0</u> Depth
<u>0</u> Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

ASSOCIATED RESOURCE AREAS COMBINED TOTAL
PROJECT LOCATION: ATHOL, AT-S21A, S22, S23, RA 97 & W21, W21A, W22
AND W23
 SEE INDIVIDUAL APPENDIX B FORMS

www.bscgroup.com

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (structures)		79	1,264	1,343 sq. ft.
Permanent (tree removals)		2,084	86,525	88,609 sq. ft.
Permanent (roads)			2,323	2,323 linear ft.
Permanent (cut/fill)			198,776	198,776 sq. ft.
Temporary (matting)		6,731	2902	9,633 sq. ft.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		1456		1456 sq. ft.
2. Temporary (matting)		2324		2324 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W22: BVW, RA Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/6/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated



Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{80}{\text{Trees (> 20')}} \quad \frac{10}{\text{Shrubs (< 20')}} \quad \frac{3}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{3}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (80%)		
Overstory	Red Maple (20%)		

C. Inventory (Soils)

See Attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

_____ 6-12" dbh _____ 12-18" dbh _____ 18-24" dbh _____ > 24" dbh

Number of Tree Cavities in trunks or limbs of:

_____ 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____ 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____ >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

DETAILED WILDLIFE HABITAT EVALUATION
PART 2(C) SOILS
PROJECT LOCATION: ATHOL, W22

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Charlton-Paxton association, 15 to 45 percent slopes, extremely stony	Well drained	0	Slightly decomposed plant material	0
Woodbridge-Paxton association, 3 to 15 percent slopes, extremely stony	Moderately well drained	38	Gravelly fine sandy loam	0
Ridgebury-Whitman association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Sandy Loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		628		628 sq. ft.
2. Permanent (structure)		79		79 sq. ft.
3. Temporary (matting)		4407		4407 sq. ft.
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-W23: BVW, RA Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/6/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No Precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Emergent Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 30 70 0 3 25
 Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Shrub	Mountain Laurel (40%)		
Overstory	Oak (25%)		

C. Inventory (Soils)

Water	
Soil Survey Unit	Drainage Class
	<u>0</u>
Texture (upper part)	Depth
<u>0</u>	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

 6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

 >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Impacts combined with AT-S21A, S22, S23, S25 & AT-W21, W21A, W22 and W23

5/11/2022

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1.				
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-S25: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/16/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested edge of ROW along banks of Millers River

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{75}{\text{Trees (> 20')}} \quad \frac{30}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{20}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “**” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (10%)		
Overstory	Red Maple (35%)		
Overstory	Oak (35%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Impacts combined with AT-S21A, S22, S23, S25 & AT-W21, W21A, W22 and W23.

5/11/2022

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1.				
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-S25: RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/16/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: _____

Subsystem: _____

Class: _____

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested edge of ROW on banks of Millers River

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{70}{\text{Trees (> 20')}} \quad \frac{80}{\text{Shrubs (< 20')}} \quad \frac{50}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{20}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “**” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Norway Maple (35%)		
Overstory	Red Oak (35%)		
Shrub	Japanese Knot Weed (80%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Impacts combined with AT-S21A, S22, S23, S25 & AT-W21, W21A, W22 and W23.

5/11/2022

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Athol, MA

Project Location (from NOI page 1)

AT-RA 97: BVW, RA Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/5/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: _____

Subsystem: _____

Class: _____

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{10}{\text{Trees (> 20')}} \quad \frac{10}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{80}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “**” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Understory	Solidago sp. (40%)		
Understory	Grass sp. (70%)		
Overstory	Oak (15%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

 6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

 >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

Appendix A

ATHOL, MA WHE PHOTOGRAPHS



Photo #1: Wildlife Habitat Evaluation 11/11/2021, AT-W1.



Photo #2: Wildlife Habitat Evaluation 11/11/2021, AT-W2.



Photo #3: Wildlife Habitat Evaluation 11/10/2021, AT-W4.



Photo #4: Wildlife Habitat Evaluation 11/10/2021, AT-W5.



Photo #5: Wildlife Habitat Evaluation 11/11/2021, AT-W7.



Photo #6: Wildlife Habitat Evaluation 11/11/2021, AT-W8.



Photo #7: Wildlife Habitat Evaluation 11/16/2021, AT-W9.



Photo #8: Wildlife Habitat Evaluation 11/16/2021, AT-W11.



Photo #9: Wildlife Habitat Evaluation 11/16/2021, AT-W13.



Photo #10: Wildlife Habitat Evaluation 11/16/2021, AT-W14.



Photo #11: Wildlife Habitat Evaluation 11/16/2021, AT-W15A.



Photo #12: Wildlife Habitat Evaluation 11/16/2021, AT-W15B.



Photo #13: Wildlife Habitat Evaluation 11/16/2021, AT-W19.



Photo #12: Wildlife Habitat Evaluation 11/5/2021, AT-W22.



Photo #15: Wildlife Habitat Evaluation 11/5/2021, AT-W23.



Photo #16: Wildlife Habitat Evaluation 11/5/2021, AT-S25.

Appendix A

GARDNER, MA WHE FORMS



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)				
2. Permanent (roads)			438	438 linear ft.
3. Permanent (cut/fill)			33991	33991 sq. ft.
4. Temporary (matting)		6199	669	6868 sq. ft.
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Matt Burne
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA
 Project Location (from NOI page 1)
 GA-W1: BLSF, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/12/2021
 Date(s) of Site Visit(s) and Data Collection
 Partly Cloudy/ No rain/ Little Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Emergent Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 3 Shrubs (< 20') 0 Woody vines 3 Mosses 10 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Spruce (20%)		
Overstory	Hemlock (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

4 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals and caisson)		2771		2771 sq. ft.
2. Permanent (roads)				
3. Permanent (cut/fill)				
4. Permanent (structures)		79		79 sq. ft.
5. Temporary (matting)		23423		23423 sq. ft.
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Matt Burne
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA

Project Location (from NOI page 1)

GA-W2: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/3/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No rain/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Forest Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 3 Shrubs (< 20') 0 Woody vines 80 Mosses 3 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (70%)		
Overstory	Spruce (15%)		

C. Inventory (Soils)

See Attachment _____
Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: GARDNER, W2**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Peru-Marlow association, 3 to 15 percent slopes, extremely stony	Moderately well drained	46	Slightly decomposed plant material	0
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		15255	643	15898 sq. ft.
2. Permanent (cut/fill)		686		686 sq. ft.
3. Temporary (matting)		35664		35664 sq. ft.
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Burnam
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA

Project Location (from NOI page 1)

GA-W3: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

Date(s) of Site Visit(s) and Data Collection

Clear/ No rain/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Burnam

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated



Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- Permanently flooded
- Intermittently exposed
- Semi-permanently flooded
- Seasonally flooded
- Saturated
- Temporarily flooded
- Intermittently flooded
- Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

one mature white pine mixed with medium aged maple and spruce and hemlock

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 60 Trees (> 20') 80 Shrubs (< 20') 0 Woody vines 90 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (70%)		
Overstory	White Pine (10%)		
Midstory	Hemlock (20%)		
Shrub	Glossy Buckthorn (30%)		

C. Inventory (Soils)

See Attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: GARDNER, W3**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Stratified gravel to sand	0
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	0	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		3416		3416 sq ft
2. Temporary (matting)		12,381		12,381 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA
 Project Location (from NOI page 1)
 GA-W4: BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/3/2021
 Date(s) of Site Visit(s) and Data Collection
 Clear/ No rain/ Little Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Sarah Barnum
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature 

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

maple pine dominated

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 50 Trees (> 20') 50 Shrubs (< 20') 0 Woody vines 90 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (50%)		
Overstory	Spruce (20%)		
Overstory	Red Maple (30%)		
Shrub	Unknown (30%)		
Understory	Sphagnum (100%)		

C. Inventory (Soils)

Peru-Marlow association, 3 to 15 percent slopes, extremely stony	Moderately well drained
Slightly decomposed plant material	Drainage Class
Texture (upper part)	46
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 4 1 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		323		323 sq ft.
2. Temporary (matting)		5168		5168 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA

Project Location (from NOI page 1)

GA-W5A: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/3/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No rain/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

tall white pines, young oak, beech, spruce

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 5 Shrubs (< 20') 0 Woody vines 0 Mosses 80 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (100%)		
Midstory	Oak (60%)		
Midstory	Hemlock (30%)		
Understory	Hay Scented (90%)		

C. Inventory (Soils)

Peru-Marlow association, 3 to 15 percent slopes, extremely stony
Slightly decomposed plant material
Texture (upper part)
0
Depth to Water Table

Moderately well drained
Drainage Class
46
Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		17700		17700 sq. ft.
2. Temporary (matting)		69511		69511 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Matt Burne

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA

Project Location (from NOI page 1)

GA-W6: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/1/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No rain/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young white pines on edge, spruce, tamarac dominant

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 15 Trees (> 20') 80 Shrubs (< 20') 0 Woody vines 0 Mosses 5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Shrub	Tamarac (90%)		
Overstory	White Pine		

C. Inventory (Soils)

See Attachment _____
Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

20 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: GARDNER, W6**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony	Well drained	0	Slightly decomposed plant material	0
Peru-Marlow association, 3 to 15 percent slopes, extremely stony	Moderately well drained	46	Slightly decomposed plant material	0
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		3137	18691	21,828 sq. ft.
2. Permanent (roads)			45	45 linear ft.
3. Permanent (cut/fill)			7929	7929 sq. ft.
4. Temporary (matting)		19913	13	19926 sq. ft.
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Matt Burne

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA

Project Location (from NOI page 1)

GA-W7: RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

Date(s) of Site Visit(s) and Data Collection

Clear/ No rain/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Riverine Subsystem: U Perennial

Class: Stream Bed Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------------|-------------------------------------------------|
| <input checked="" type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

mixed trees, beech, oak, white pine, red maple

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 20 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 0 Mosses 30 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (60%)		
	Oak		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		10023	38060.5	48,083.5 sq ft.
2. Permanent (structure)		79		79 sq ft.
3. Temporary (matting)		24578		24,578 sq ft.
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Sarah Barnum

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA

Project Location (from NOI page 1)

GA-W11: RA, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No rain/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 70 Shrubs (< 20') 0 Woody vines 50 Mosses 80- Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (50%)		
Understory	Red Maple (30%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		6810	64037	70,847 sq. ft.
2. Permanent (roads)			1010	1010 linear ft.
3. Permanent (cut/fill)			64459	6,4459 sq. ft.
4. Permanent (structures)			79	79 sq. ft.
5. Temporary (matting)		12966	3361.5	16,327 sq. ft.
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Matt Burne

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA

Project Location (from NOI page 1)

GA-W12: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

Date(s) of Site Visit(s) and Data Collection

Clear/ Little rain/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Tall white pines, medium red maple, small beech

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 50 Trees (> 20') 40 Shrubs (< 20') 0 Woody vines 5 Mosses 5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (65%)		
Shrub	Red Maple		

C. Inventory (Soils)

See Attachment _____
Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

ASSOCIATED RESOURCE AREAS COMBINED TOTAL
PROJECT LOCATION: GARDNER, GA-W11, GA-W12, GA-S11
 SEE INDIVIDUAL APPENDIX B FORMS

www.bscgroup.com

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (structures)		79		79 sq ft.
Permanent (tree removals)		16,832	102,098	118,930 sq ft.
Permanent (roads/cut/fill)			1010	1010 linear ft.
Temporary (matting)		37,544	3361.5	40,905.5 sq ft.

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: GARDNER, W12**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0
Searsport loamy sand, 0 to 3 percent slopes	Very Poorly Drained	0	Muck	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		173		173 sq. ft.
2. Temporary (matting)		383		383 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Matt Burne
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA
 Project Location (from NOI page 1)
 GA W18: BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/1/2021
 Date(s) of Site Visit(s) and Data Collection
 Clear/ No rain/ Little Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/16/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature 

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Riverine Subsystem: U Perrenial
 Class: UNC_Shore Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

mix of white pine, oak, and red maple on row edge

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 60 Trees (> 20') 35 Shrubs (< 20') 0 Woody vines 0 Mosses 5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (55%)		
	Oak		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

10 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		2308		2308 sq. ft.
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Matt Burne

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/1/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ Little rain/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Red Maples dominated by low growing buckthorn

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 40 Trees (> 20') 40 Shrubs (< 20') 0 Woody vines 0 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (80%)		
Shrub	Glossy Buckthorn (95%)		

C. Inventory (Soils)

Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony
Stratified gravel to sand
Texture (upper part)
0
Depth to Water Table

Very poorly drained
Drainage Class
0
Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		459		459 sq. ft.
2. Temporary (work pads, tree clearing, access)		3653		3653 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Matt Burne

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA
 Project Location (from NOI page 1)
 GA-W35: BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 10/28/2021
 Date(s) of Site Visit(s) and Data Collection
 Overcast/ Little rain/ No Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/16/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Forest Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Very small wet pocket

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 15 Shrubs (< 20') 0 Woody vines 0 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (70%)		
Overstory	White Pine (15%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

 6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

 >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		1240		1240 sq ft.
2. Temporary (matting)		2641		2641 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA

Project Location (from NOI page 1)

GA-W39: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/3/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No rain/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Forest Subclass: _____

Hydrology/Water Regime

- Permanently flooded
- Saturated
- Intermittently exposed
- Temporarily flooded
- Semi-permanently flooded
- Intermittently flooded
- Seasonally flooded
- Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young maples and oaks, one mature red maple

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 0 Mosses 60 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (80%)		
Overstory	Oak (90%)		
Shrub	High bush blueberry (15%)		
Understory	Hay Scented Fern (80%)		

C. Inventory (Soils)

Marlow fine sandy loam, 3 to 8 percent slopes	Well drained
Soil Survey Unit	Drainage Class
Loam	61
Texture (upper part)	Depth
46	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		1080		1080 sq ft.
2. Temporary (matting)		6721		6721 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Gardner, MA
 Project Location (from NOI page 1)
 BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/3/2021
 Date(s) of Site Visit(s) and Data Collection
 Partly Cloudy/ No rain/ Little Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Sarah Barnum
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

 Signature *S. Barnum*

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Forest Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

mix of white pine, oak, red maple

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{20}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{35}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (70%)		
Overstory	Red Maple (15%)		
Shrub	High bush blueberry (20%)		
Understory	Hay Scented Fern (70%)		
Overstory	Oak (15%)		

C. Inventory (Soils)

Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony Well drained
 Drainage Class
 Loam 0
 Texture (upper part) 0
 Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

Appendix A

GARDNER, MA WHE PHOTOGRAPHS



Photo #1: Wildlife Habitat Evaluation 11/3/2021, GA-W1.



Photo #2: Wildlife Habitat Evaluation 11/3/2021, GA-W3.



Photo #3: Wildlife Habitat Evaluation 11/3/2021, GA-W2.



Photo #4: Wildlife Habitat Evaluation 11/3/2021, GA-W4.



Photo #5: Wildlife Habitat Evaluation 11/3/2021, GA-W5A.



Photo #6: Wildlife Habitat Evaluation 11/1/2021, GA-W6.



Photo #7: Wildlife Habitat Evaluation 11/1/2021, GA-W7.



Photo #8: Wildlife Habitat Evaluation 12/2/2021, GA-W11.



Photo #9: Wildlife Habitat Evaluation 12/2/2021, GA-S11.



Photo #10: Wildlife Habitat Evaluation 11/1/2021, GA-W12.



Photo #11: Wildlife Habitat Evaluation 11/1/2021, GA-W18.



Photo #12: Wildlife Habitat Evaluation 11/1/2021, GA-W21.



Photo #13: Wildlife Habitat Evaluation 10/28/2021, GA-W35.



Photo #14: Wildlife Habitat Evaluation 11/3/2021, GA-W39.



Photo #15: Wildlife Habitat Evaluation 11/3/2021, GA-W40.



Photo #16: Wildlife Habitat Evaluation 11/3/2021, GA-S1 (RFA Str 400).



Photo #17: Wildlife Habitat Evaluation 11/1/2021, GA- S12 (RFA Str 433).

Appendix A

ROYALSTON, MA WHEFORMS



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		969		969 sq. ft.
2. Temporary (matting)		3760		3760 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W1: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/10/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

There is a defined stream channel through wetland

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{50}{\text{Trees (> 20')}} \quad \frac{50}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{10}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Midstory	Hemlock (50%)		
Overstory	White Pine (20%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Fine Sandy Loam
Fine sandy loam	Drainage Class
Texture (upper part)	64
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
(turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
10.0 acres in size? Yes No
25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
100 acres in size? Yes No
250 acres in size? Yes No
500 acres in size? Yes No
- (grassland nesting birds) > 1.0 acre in size? Yes No
(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		965		965 sq. ft.
2. Temporary (matting)		5176		5176 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 RO-W2: BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/10/2021
 Date(s) of Site Visit(s) and Data Collection
 Partly Cloudy/ No precipitation/ Little wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Wetland confined to slope in row _____

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 15 Shrubs (< 20') 0 Woody vines 0 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (20%)		
Overstory	Oak (40%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony
 Fine sandy loam
 Texture (upper part)
 64
 Depth to Water Table

Moderately well drained
 Drainage Class
 0
 Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)	_____	<u>1300</u>	_____	<u>1300 sq. ft.</u>
2. Temporary (matting)	_____	<u>2979</u>	_____	<u>2979 sq. ft.</u>
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/10/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrub Shrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Stream channel runs through wetland though it's weak

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{0}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{25}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Yellow Birch (60%)		
Overstory	Red Maple (15%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		1521		1521 sq. ft.
2. Temporary (matting)		5142		5142 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/10/2021
 Date(s) of Site Visit(s) and Data Collection
 Partly Cloudy/ No precipitation/ Little wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
 Vegetation Description _____
 Wetland confined to row, slope seepage, oak pine off row
 Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 10 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (50%)		
Overstory	Oak (25%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony
 Moderately well drained
 Fine sandy loam
 Drainage Class
 Texture (upper part) 64
 0
 Depth
 Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
(turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
10.0 acres in size? Yes No
25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
100 acres in size? Yes No
250 acres in size? Yes No
500 acres in size? Yes No
- (grassland nesting birds) > 1.0 acre in size? Yes No
(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

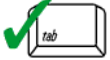


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		8287		8287 sq. ft.
2. Temporary (matting)		30218		30218 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/10/2021
 Date(s) of Site Visit(s) and Data Collection
 Clear/ No precipitation/ Little wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Oak pine forest. Wetland is a seepage sloped wetland with pretty fac community

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{40}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{10}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Oak (70%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained
Fine sandy loam	Drainage Class
Texture (upper part)	64
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

ASSOCIATED RESOURCE AREAS COMBINED TOTAL
PROJECT LOCATION: ROYALSTON RO-W6
 SEE INDIVIDUAL APPENDIX B FORMS

www.bscgroup.com

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (tree removals)		10,357	2,910	13,368 sq. ft.
Temporary (matting)		60,763	4,070	64,833 sq. ft.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree clearing)</u>	_____	<u>10357</u>	<u>2910</u>	<u>13268 sq. ft.</u>
<u>2. Temporary (matting)</u>	_____	<u>60763</u>	<u>4070</u>	<u>64833 sq. ft.</u>
<u>3.</u>	_____	_____	_____	_____
<u>4.</u>	_____	_____	_____	_____
<u>5.</u>	_____	_____	_____	_____
<u>6.</u>	_____	_____	_____	_____
<u>7.</u>	_____	_____	_____	_____

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W6: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/10/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ Little precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description

one mature red maple will be cut, ohyer branches of young oak and beech will be cut in particular area



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{20}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{50}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (60%)		
Midstory	Beech (20%)		
Shrub	Winterberry (10%)		
Understory	Interrupted Fern (60%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|--------------------------------------------------|-----------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? <input type="checkbox"/> Yes | <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Combined with impacts on RO-W6

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removal)</u>	_____	_____	_____	_____
<u>2. Temporary (matting)</u>	_____	_____	_____	_____
<u>3.</u>	_____	_____	_____	_____
<u>4.</u>	_____	_____	_____	_____
<u>5.</u>	_____	_____	_____	_____
<u>6.</u>	_____	_____	_____	_____
<u>7.</u>	_____	_____	_____	_____

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W6: BVW, RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/10/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ Little precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

medium aged red maple to be trimmed/cut, white pine, oak

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{80}{\text{Trees (> 20')}} \quad \frac{90}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{100}{\text{Mosses}} \quad \frac{80}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (50%)		
Overstory	Oak (30%)		
Overstory	White Pines (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? Yes No

(marsh and waterbirds) 2.0 acres in size? Yes No

5.0 acres in size? Yes No

10.0 acres in size? Yes No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W6**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0
Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Stratified gravel to sand	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		3156		3156 sq. ft.
2. Temporary (matting)		2458		2458 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
Project Location (from NOI page 1)

RO-W7: BVW, Proposed work pad in the area and structure replacement.
Impact Area (number/name)


11/22/2021
Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ Little wind
Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne
Person completing form per 310 CMR 10.60(1)(b)

5/19/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{60}{\text{Trees (> 20')}} \quad \frac{40}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{20}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (40%)		
Overstory	Hemlock (25%)		
	Oak (20%)		
Shrub	Alder (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
(turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
10.0 acres in size? Yes No
25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
100 acres in size? Yes No
250 acres in size? Yes No
500 acres in size? Yes No
- (grassland nesting birds) > 1.0 acre in size? Yes No
(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/19/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	_____	<u>19429</u>	_____	<u>19429 sq. ft.</u>
<u>2. Temporary (matting)</u>	_____	<u>14735</u>	_____	<u>14735 sq. ft.</u>
<u>3.</u>	_____	_____	_____	_____
<u>4.</u>	_____	_____	_____	_____
<u>5.</u>	_____	_____	_____	_____
<u>6.</u>	_____	_____	_____	_____
<u>7.</u>	_____	_____	_____	_____

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W10: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/22/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ Windy

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/19/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Wetland somewhat confined to row

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{70}{\text{Trees (> 20')}} \quad \frac{40}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{20}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (50%)		
Overstory	Red Maple (30%)		
Shrub	Blueberry (50%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained
Fine sandy loam	Drainage Class
Texture (upper part)	64
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 4

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

ASSOCIATED RESOURCE AREAS COMBINED TOTAL
PROJECT LOCATION: ROYALSTON R0-W11 & S11
 SEE INDIVIDUAL APPENDIX B FORMS

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Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (tree removals)		5,538		5,538 sq. ft.
Permanent (structure)		79		79 sq. ft.
Temporary (matting)		24,736	6	24,742 sq. ft.

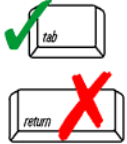


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project
 Project Name _____
Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA
 Location _____
Please refer to breakdown of permanent and temporary impacts below. 5/19/2022
 Size of Area Being Impacted _____ Date _____

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)	_____	5538	_____	5538 sq. ft.
2. Permanent (structure)	_____	79	_____	79 sq. ft.
3. Temporary (matting)	_____	24736	6	24742 sq. ft.
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


 Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b)) Sarah Barnum
 Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W11: BVW, RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/29/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/19/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

young to medium red maples and white pines

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{50}{\text{Trees (> 20')}} \quad \frac{0}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{40}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (50%)		
Overstory	Red Maple (50%)		
Shrub	Glossy Buckthorn (90%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? Yes No

(marsh and waterbirds) 2.0 acres in size? Yes No

5.0 acres in size? Yes No

10.0 acres in size? Yes No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

ADDITIONAL ASSOCIATED RESOURCE AREAS
PROJECT LOCATION: ROYALSTON, R0-W12 AND S12

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Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent(tree removals)		1668		1668 sq. ft.
Temporary(matting)		9007		9007 sq. ft.

ADDITIONAL ASSOCIATED RESOURCE AREAS
PROJECT LOCATION: ROYALSTON, RIVERFRONT AREA

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent(tree clearing)			8,157	8,157 sq. ft.
Permanent(roads)			29	29 linear ft.
Permanent(cut/fill)			2,548	2,548 sq. ft.
Temporary(matting)			20,899	20,899 sq. ft.

ADDITIONAL ASSOCIATED RESOURCE AREAS
PROJECT LOCATION: ROYALSTON, BORDERING LAND SUBJECT TO FLOODING

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent(tree removals)			40	40 sq. ft.



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

Size of Area Being Impacted

5/19/2022

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	_____	<u>1,668</u>	<u>8,197</u>	<u>9,865 sq. ft.</u>
<u>2. Permanent (roads)</u>	_____	_____	<u>29</u>	<u>29 linear ft.</u>
<u>3. Permanent (cut/fill)</u>	_____	_____	<u>2,548</u>	<u>2,548 sq. ft.</u>
<u>4. Temporary (matting)</u>	_____	<u>9,007</u>	<u>20,899</u>	<u>29,906 sq. ft.</u>
<u>5.</u>	_____	_____	_____	_____
<u>6.</u>	_____	_____	_____	_____
<u>7.</u>	_____	_____	_____	_____

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


 Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
 Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W12 & S12: RA, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/29/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/19/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated



Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description

young to mediu aged mixed white pine, hemlock, red maple

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{90}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{80}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (50%)		
Overstory	White Pine (25%)		
Overstory	Hemlock (25%)		
Shrub	Mountain Laurel (80%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
(turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
10.0 acres in size? Yes No
25.0 acres in size? Yes No
- For upland resource areas is the impact area part of contiguous forested habitat at least
- (forest interior nesting birds) 50 acres in size? Yes No
100 acres in size? Yes No
250 acres in size? Yes No
500 acres in size? Yes No
- (grassland nesting birds) > 1.0 acre in size? Yes No
(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/19/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		5145		5145 sq. ft.
2. Temporary (matting)		4463		4463 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 RA, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/29/2021
 Date(s) of Site Visit(s) and Data Collection
 Overcast/ No precipitation/ Little Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/19/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

young to medium red maples on edges, but mostly tall shrubs of mtn laurel and alder

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{40}{\text{Trees (> 20')}} \quad \frac{80}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{20}{\text{Mosses}} \quad \frac{70}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Shrub	Alder (50%)		
Shrub	Mountain Laurel (40%)		
Overstory	Red Maple (40%)		
Understory	Sensitive fern (70%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained
Fine sandy loam	Drainage Class
Texture (upper part)	64
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/19/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		1051		1051 sq. ft.
2. Temporary (matting)		7035		7035 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W15: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/29/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/19/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young to medium aged red maple, hemlock, mtn laurel, witch hazel

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{60}{\text{Trees (> 20')}} \quad \frac{30}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{80}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (50%)		
Shrub	Witch Hazel (20%)		
Overstory	Red Maple (50%)		
Understory	Interrupted fern (70%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained
Fine sandy loam	Drainage Class
Texture (upper part)	64
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W16A: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/10/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little win

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Wetland largely confined to row.

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{40}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{20}{\text{Mosses}} \quad \frac{10}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (70%)		
Overstory	Oak (15%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? Yes No

(marsh and waterbirds) 2.0 acres in size? Yes No

5.0 acres in size? Yes No

10.0 acres in size? Yes No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W16A**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony	Well drained	0	Loam	0
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W17: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/10/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Small pool caused by deep rut in center wetland. Likely vp

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{10}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{15}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (70%)		
	Red Maple (15%)		

C. Inventory (Soils)

See attachment
Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W17**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony	Well drained	0	Loam	0
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		351		351 sq. ft.
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W18: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/10/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Wetland confined to ROW. Impact area only shrubs. No permanent impacts

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{0}{\text{Trees (> 20')}$ $\frac{80}{\text{Shrubs (< 20')}$ $\frac{0}{\text{Woody vines}}$ $\frac{0}{\text{Mosses}}$ $\frac{30}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Shrub	Glossy Buckthorne (50%)		
Shrub	Highbush blueberry (30%)		

C. Inventory (Soils)

See attachment
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W18**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Lyman-Tunbridge-Berkshire association, 15 to 45 percent slopes, very rocky	Well drained	58	Sandy Loam	0
Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony	Well drained	0	Loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

ASSOCIATED RESOURCE AREAS COMBINED TOTAL

www.bscgroup.com

PROJECT LOCATION: ROYALSTON RO-S19, S20, S21 & RO-W19 A-G, 20 & 21

SEE INDIVIDUAL APPENDIX B FORMS

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent(tree removals)	485	1,728	14,205	16,418 sq. ft.
Permanent(structures)			158	158 sq. ft.
Permanent(roads)			2,906	2,906 linear ft.
Permanent(cut/fill)			84,496	84,496 sq. ft.
Temporary(matting)		464,095	414	464,509 sq. ft.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	<u> </u>	<u>443</u>	<u>10216</u>	<u>10657 sq. ft.</u>
<u>2. Permanent (structures)</u>	<u> </u>	<u> </u>	<u>158</u>	<u>158 sq. ft.</u>
<u>3. Permanent (roads)</u>	<u> </u>	<u> </u>	<u>2358</u>	<u>2358 linear ft.</u>
<u>4. Permanent (cut/fill)</u>	<u> </u>	<u> </u>	<u>86193</u>	<u>86193 sq. ft.</u>
<u>5. Temporary (matting)</u>	<u> </u>	<u>1010</u>	<u> </u>	<u>1010 sq. ft.</u>
<u>6.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>7.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W19: RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/10/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: _____ Subsystem: _____

Class: _____ Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Steep slope to river. ROW mostly clear. Small polys in center must be shrubs

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{10}{\text{Trees (> 20')}} \quad \frac{90}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{60}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
	Blueberry (50%)		
	Alder (30%)		

C. Inventory (Soils)

Soil Survey Unit	Drainage Class
Texture (upper part)	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/19/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		2790		2790 sq. ft.
2. Permanent (structures)		158		158 sq. ft.
3. Temporary (matting)		76298		
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W26: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/29/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/19/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young to medium hemlock, white pine, red maple

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{60}{\text{Trees (> 20')}} \quad \frac{80}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{40}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (70%)		
Overstory	White pine (15%)		
Overstory	Red Maple (15%)		
Shrub	Winterberry (60%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W26**

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Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

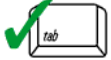


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/19/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		1067		1067 sq. ft.
2. Temporary (matting)		10317		10317 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W27: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/29/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

Person completing form per 310 CMR 10.60(1)(b)

5/19/2022

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- Permanently flooded
- Saturated
- Intermittently exposed
- Temporarily flooded
- Semi-permanently flooded
- Intermittently flooded
- Seasonally flooded
- Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

medium aged hemlocks, red maple, oaks and one yellow birch

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{70}{\text{Trees (> 20')}} \quad \frac{20}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{90}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (60%)		
Overstory	Oaks (20%)		
Overstory	Red Maple (15%)		
Overstory	Yellow Birch (5%)		
Understory	Golden Rod (80%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W27**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	<u> </u>	<u>985</u>	<u> </u>	<u>985 sq. ft.</u>
<u>2. Temporary (matting)</u>	<u> </u>	<u>2049</u>	<u> </u>	<u>2049 sq. ft.</u>
<u>3.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>4.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>5.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>6.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>7.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W32: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/9/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young red maples, spruce

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{0}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{60}{\text{Mosses}} \quad \frac{0}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (90%)		
Shrub	High Bush Blueberry (50%)		

C. Inventory (Soils)

See attachment
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W32**

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Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Stratified gravel to sand	0
Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony	Well drained	0	Loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	<u> </u>	<u>6514</u>	<u> </u>	<u>6514 sq. ft.</u>
<u>2. Temporary (matting)</u>	<u> </u>	<u>12515</u>	<u> </u>	<u>12515 sq. ft.</u>
<u>3.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>4.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>5.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>6.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>7.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W35

Impact Area (number/name)

11/9/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

Person completing form per 310 CMR 10.60(1)(b)

5/17/2022

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Forested Wetland Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young hemlocks mixed with medium aged hemlocks. medium aged white pine. some red maples mixed in some oaks mixed in



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{20}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{80}{\text{Mosses}} \quad \frac{20}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (80%)		
Overstory	White Pine (20%)		
Understory	Sphagnum (90%)		

C. Inventory (Soils)

See attachment
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 1 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? Yes No

(marsh and waterbirds) 2.0 acres in size? Yes No

5.0 acres in size? Yes No

10.0 acres in size? Yes No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W35**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0
Croghan loamy fine sand, 3 to 8 percent slopes	Moderately well drained	0	Sand	0
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0
Montauk-Canton association, 15 to 35 percent slopes, extremely stony	Well drained	64	Bedrock	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		<u>2402</u>		<u>2402 sq. ft.</u>
2. Temporary (matting)		<u>54</u>		<u>54 sq. ft.</u>
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W36

Impact Area (number/name)

11/9/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

Person completing form per 310 CMR 10.60(1)(b)

5/17/2022

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrub Shrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young red maple dominant, some young to medium white pines

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{80}{\text{Trees (> 20')}} \quad \frac{50}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{20}{\text{Mosses}} \quad \frac{30}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (70%)		
Overstory	White Pine (30%)		
Shrub	Speckled Alder (30%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? Yes No

(marsh and waterbirds) 2.0 acres in size? Yes No

5.0 acres in size? Yes No

10.0 acres in size? Yes No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W36**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0
Skerry fine sandy loam, 3 to 8 percent slopes	Moderately well drained	0	Very gravelly sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	<u> </u>	<u>4466</u>	<u>19693</u>	<u>24,159 sq. ft.</u>
<u>2. Permanent (structures)</u>	<u> </u>	<u> </u>	<u>79</u>	<u>79 sq. ft.</u>
<u>3. Permanent (cut/fill)</u>	<u> </u>	<u> </u>	<u>5518</u>	<u>5518 sq. ft.</u>
<u>4. Temporary (matting)</u>	<u> </u>	<u>7490</u>	<u> </u>	<u>7490 sq. ft.</u>
<u>5.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>6.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>7.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W38

Impact Area (number/name)

11/5/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ Light Breeze

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Emergent

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Recent large scale beaver activity

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{75}{\text{Trees (> 20')}} \quad \frac{15}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{50}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (70%)		
Overstory	Red Maple (30%)		

C. Inventory (Soils)

See attachment
Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

5 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- Rock piles, crevices, or hollow logs suitable for:
 - otter mink porcupine bear bobcat turkey vulture
- Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

- Breeding amphibians Non-breeding amphibians (foraging, re-hydration)
- Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W38**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0
Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony	Well drained	0	Loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



**Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program**

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below. 5/19/2022

Size of Area Being Impacted Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	<u> </u>	<u>97</u>	<u>5972</u>	<u>6069 sq. ft.</u>
<u>2. Permanent (roads)</u>	<u> </u>	<u> </u>	<u>130</u>	<u>130 linear ft.</u>
<u>3. Permanent (cut/fill)</u>	<u> </u>	<u> </u>	<u>6551</u>	<u>6551 sq. ft.</u>
<u>4. Temporary (matting)</u>	<u> </u>	<u> </u>	<u>18447</u>	<u>18447 sq. ft.</u>
<u>5.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>6.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>7.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W41/S41: BVW, RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

12/2/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/19/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Forest Subclass: _____

Hydrology/Water Regime

- Permanently flooded
- Intermittently exposed
- Semi-permanently flooded
- Seasonally flooded
- Saturated
- Temporarily flooded
- Intermittently flooded
- Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{50}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{20}{\text{Mosses}} \quad \frac{20}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (70%)		
Overstory	Red Oak (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? Yes No

(marsh and waterbirds) 2.0 acres in size? Yes No

5.0 acres in size? Yes No

10.0 acres in size? Yes No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

ASSOCIATED RESOURCE AREAS COMBINED TOTAL
PROJECT LOCATION: ROYALSTON RO-S46, RO-W46, W48 & W49
SEE INDIVIDUAL APPENDIX B FORMS

www.bscgroup.com

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (tree removals)		12,395	25,004	37,339 sq. ft.
Permanent (roads)			456	456 linear ft.
Permanent (cut/fill)			25,520	25,520 sq. ft.
Temporary (matting)		51,223	16,579	67,802 sq. ft.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		8807		8807 sq. ft.
2. Temporary (matting)		18020		18020 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 RO-W48
 Impact Area (number/name)
 11/6/2021
 Date(s) of Site Visit(s) and Data Collection
 Clear/ No precipitation/ Little wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Forest Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{50}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{20}{\text{Mosses}} \quad \frac{40}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (40%)		
Overstory	Oak (30%)		
Overstory	Red Maple (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 1 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		1785		1785 sq. ft.
2. Temporary (matting)		15760		15760 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 RO-W49
 Impact Area (number/name)
 11/6/2021
 Date(s) of Site Visit(s) and Data Collection
 Clear/ No precipitation/ Little wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Emergent Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
 Vegetation Description _____
 Small number of trees being cut in wetlands area _____
 Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{40}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{40}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (50%)		
Overstory	White Pine (40%)		

C. Inventory (Soils)

See attachment
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W49**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Stratified gravel to sand	0
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

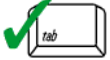


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		998		998 sq. ft.
2. Temporary (matting)		1075		1075 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 RO-W50
 Impact Area (number/name)
 11/6/2021
 Date(s) of Site Visit(s) and Data Collection
 Clear/ No precipitation/ No wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrub shrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Wetland largely confined to ROW

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 75 30 0 0 45
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (75%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained
Fine sandy loam	Drainage Class
Texture (upper part)	64
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	_____	<u>5922</u>	<u>13,477</u>	<u>19,399 sq. ft.</u>
<u>2. Permanent (roads)</u>	_____	_____	<u>294</u>	<u>294 linear ft.</u>
<u>3. Permanent (cut/fill)</u>	_____	_____	<u>549</u>	<u>549 sq. ft.</u>
<u>4. Temporary (matting)</u>	_____	<u>3840</u>	<u>17,241</u>	<u>21,081 sq. ft.</u>
<u>5.</u>	_____	_____	_____	_____
<u>6.</u>	_____	_____	_____	_____
<u>7.</u>	_____	_____	_____	_____

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Sarah Barnum
 Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
 Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W51: RA, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/5/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Some large pine. Brook runs through ROW north to south

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{30}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{15}{\text{Mosses}} \quad \frac{25}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (70%)		
Overstory	Red Maple (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

4 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W52: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/5/2021

Date(s) of Site Visit(s) and Data Collection

Clear/No precipitation/No wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated



Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Work area includes stand of shrubs in row

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 20 0 70 40
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
<u>Overstory</u>	<u>White Pine (15%)</u>	<u> </u>	<u> </u>
<u>Overstory</u>	<u>Oak (40%)</u>	<u> </u>	<u> </u>
<u>Overstory</u>	<u>Red Maple (15%)</u>	<u> </u>	<u> </u>
<u>Shrub</u>	<u>Hemlock (15%)</u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

C. Inventory (Soils)

<u>Becket-Skerry association, 0 to 15 percent slopes, extremely stony</u>	<u>Moderately well drained</u>
<u>Fine sandy loam</u>	<u>Drainage Class</u>
<u>Texture (upper part)</u>	<u>64</u>
<u>0</u>	<u>Depth</u>
<u>Depth to Water Table</u>	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		3943		3943 sq. ft.
2. Temporary (matting)		25612		25612 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA
 Project Location (from NOI page 1)
 RO-W54
 Impact Area (number/name)
 11/6/2021
 Date(s) of Site Visit(s) and Data Collection
 Clear/ No precipitation/ Little wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{15}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{5}{\text{Mosses}} \quad \frac{30}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (40%)		
Overstory	Oak (25%)		
Shrub	Hemlock (10%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W54

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Croghan loamy fine sand, 0 to 3 percent slopes	Moderately well drained	0	Sand	0
Colton gravelly loamy sand, 3 to 8 percent slopes	Excessively Drained	0	Fine sand	46

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

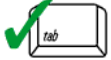


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		3846		3846 sq. ft.
2. Temporary (matting)		2686		2686 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 RO-W56
 Impact Area (number/name)
 11/11/2021
 Date(s) of Site Visit(s) and Data Collection
 Partly Cloudy/ No precipitation/ Little wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Sarah Barnum
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
 Vegetation Description
young red maples and white pines
 Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{80}{\text{Trees (> 20')}} \quad \frac{100}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{70}{\text{Mosses}} \quad \frac{70}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Shrub	Male Berry (80%)		
Overstory	White Pine (10%)		
Midstory	White Birch (10%)		
Overstory	Red Maple (80%)		
Understory	Sphagnum (80%)		

C. Inventory (Soils)

Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony Well drained
 Loam Drainage Class
 Texture (upper part) 0
 Depth to Water Table 0

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		5025		5025 sq. ft.
2. Temporary (matting)		6199		6199 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W57

Impact Area (number/name)

11/11/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated



Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

hemlock dominated, young to medium aged. some young to medium aged oaks, medium aged black cherries



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 50 Shrubs (< 20') 0 Woody vines 90 Mosses 30 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (60%)		
Overstory	Oaks (30%)		
Overstory	Black Cherries (10%)		
Shrub	Mountain Laurel (60%)		
Understory	Moss (90%)		

C. Inventory (Soils)

Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony Well drained
 Loam Drainage Class
 Texture (upper part) 0
 Depth to Water Table 0
0 Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

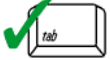


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		3901		3901 sq. ft.
2. Temporary (matting)		6373		6373 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W58

Impact Area (number/name)

11/11/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrub Shrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

medium aged oaks, hemlocks and red maples, young beech trees

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 80 Shrubs (< 20') 0 Woody vines 90 Mosses 70 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (10%)		
Overstory	Oaks (80%)		
Overstory	Hamlocks (10%)		
Shrub	Male Berry (40%)		
Understory	Hay Scented Fern (50%)		

C. Inventory (Soils)

Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony Well Drained
 Loam Drainage Class
 Texture (upper part) 0
 Depth to Water Table 0 Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

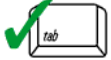


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		11987		11987 sq. ft.
2. Temporary (matting)		31500		31500 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
Project Location (from NOI page 1)

RO-W59
Impact Area (number/name)


11/11/2021
Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind
Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum
Person completing form per 310 CMR 10.60(1)(b)

5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Emergent Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

one mature oak, mostly young red maple, white pine and oak

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{70}{\text{Trees (> 20')}} \quad \frac{10}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{100}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (70%)		
Overstory	Oak (20%)		
Understory	Golden rod (60%)		
Understory	Grass Species (40%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W59**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Marlow fine sandy loam, 8 to 15 percent slopes	Well drained	0	Sandy Loam	0
Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony	Well drained	0	Slightly decomposed plant material	0
Croghan loamy fine sand, 3 to 8 percent slopes	Moderately well drained	0	Sand	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		1215		1215 sq. ft.
2. Temporary (matting)		1430		1430 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 RO-W60
 Impact Area (number/name)
 11/11/2021
 Date(s) of Site Visit(s) and Data Collection
 Partly Cloudy/ No precipitation/ Little wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Sarah Barnum
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young red maple, oak and spruce

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{40}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{90}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (30%)		
Overstory	Oak (60%)		
Shrub	Spirea (40%)		
Understory	Sensitive Fern (70%)		

C. Inventory (Soils)

Croghan loamy fine sand, 3 to 8 percent slopes	Moderately well drained
Soil Survey Unit	Drainage Class
Sand	0
Texture (upper part)	Depth
0	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals) 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds) 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds) > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.) > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		651		651 sq. ft.
2. Temporary (matting)		13146		13146 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
 Project Location (from NOI page 1)
 RO-W61
 Impact Area (number/name)
 11/11/2021
 Date(s) of Site Visit(s) and Data Collection
 Partly Cloudy/ No precipitation/ Little wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Sarah Barnum
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Emergent Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------------|-------------------------------------------------|
| <input checked="" type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

red maple and hemlock

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{60}{\text{Trees (> 20')}} \quad \frac{0}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{90}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (90%)		
Midstory	Hemlock (10%)		
Understory	Grasses (90%)		

C. Inventory (Soils)

See attachment _____
Soil Survey Unit _____ Drainage Class _____

Texture (upper part) _____ Depth _____

Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W61**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony	Well drained	0	Loam	0
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

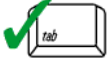


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		844		844 sq. ft.
2. Temporary (matting)		4286		4286 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
Project Location (from NOI page 1)

RO-W61
Impact Area (number/name)

11/12/2021
Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind
Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson
Person completing form per 310 CMR 10.60(1)(b)

5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested on edges with hydrologic connection

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 90 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (40%)		
Overstory	Hemlock (50%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
(turtles, frogs, waterfowl, mammals) 5.0 acres in size? Yes No
10.0 acres in size? Yes No
25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds) 50 acres in size? Yes No
100 acres in size? Yes No
250 acres in size? Yes No
500 acres in size? Yes No
(grassland nesting birds) > 1.0 acre in size? Yes No
(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W62**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Peru-Marlow association, 3 to 15 percent slopes, extremely stony	Moderately well drained	46	Slightly decomposed plant material	0
Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony	Well drained	0	Slightly decomposed plant material	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		5460		5460 sq. ft.
2. Temporary (matting)		3179		3179 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-W64

Impact Area (number/name)

11/12/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested edge of ROW with dense shrubs on ROW

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{80}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{70}{\text{Mosses}} \quad \frac{0}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Shrub	Mountain Laurel (70%)		
Overstory	Hemlock (90%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained
Fine sandy loam	Drainage Class
Texture (upper part)	0
64	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: ROYALSTON, W64**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0
Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony	Well drained	0	Slightly decomposed plant material	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

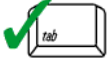


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)		3242		3242 sq. ft.
2. Temporary (matting)		3093		3093 sq. ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA
Project Location (from NOI page 1)

RO-W67
Impact Area (number/name)


11/12/2021
Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind
Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson
Person completing form per 310 CMR 10.60(1)(b)

5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

Permanently flooded Saturated

Intermittently exposed Temporarily flooded

Semi-permanently flooded Intermittently flooded

Seasonally flooded Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description
forest at ROW edge

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 70 Mosses 50 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (10%)		
Overstory	Hemlock (80%)		

C. Inventory (Soils)

Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony Well drained
 Slightly decomposed plant material Drainage Class
 Texture (upper part) 0
 Depth to Water Table 0 Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Table with 5 columns: Name, Waterbody/Waterway, Wetland, Upland*, Total Area. It lists impact areas such as Permanent (tree removals), Permanent (roads), Permanent (cut/fill), and Temporary (matting).

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Multiple horizontal lines provided for the Narrative Description of Site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-RFA Str 203 RO-S6

Impact Area (number/name)

11/10/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ Little precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: _____ Subsystem: _____

Class: _____ Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

mostly young trees, some medium aged hemlocks and white pine, some young oak and red maples

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{80}{\text{Trees (> 20')}} \quad \frac{0}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{70}{\text{Mosses}} \quad \frac{40}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (50%)		
Overstory	White Pine (20%)		
Overstory	Oak (20%)		
Overstory	Red Maple (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Combined with impacts to RO-W11

5/19/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	_____	_____	_____	_____
<u>2. Permanent (structure)</u>	_____	_____	_____	_____
<u>3. Temporary (matting)</u>	_____	_____	_____	_____
<u>4.</u>	_____	_____	_____	_____
<u>5.</u>	_____	_____	_____	_____
<u>6.</u>	_____	_____	_____	_____
<u>7.</u>	_____	_____	_____	_____

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-S11: RA, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/22/2021

Date(s) of Site Visit(s) and Data Collection

Matt Burne

Weather Conditions During Site Visit (if snow cover, include depth)


Overcast/ No precipitation/ Windy

5/19/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrub Shrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

At toe of slope steep hill

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{40}{\text{Trees (> 20')}$ $\frac{60}{\text{Shrubs (< 20')}$ $\frac{0}{\text{Woody vines}}$ $\frac{0}{\text{Mosses}}$ $\frac{70}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Red Maple (60%)		
	Shrubs		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 4

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? Yes No

(marsh and waterbirds) 2.0 acres in size? Yes No

5.0 acres in size? Yes No

10.0 acres in size? Yes No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|--------------------------------------------------|-----------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? <input type="checkbox"/> Yes | <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-S33 (RO-RA Str 271)

Impact Area (number/name)

11/9.2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: _____ Subsystem: _____

Class: _____ Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description

mix of white pines, oak, beech, and black cherry

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{30}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{10}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “*” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Black Cherry (15%)		
Overstory	White Pine (70%)		
Overstory	Bleech (10%)		
Shrub	Silky Dogwood (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- Rock piles, crevices, or hollow logs suitable for:
 - otter mink porcupine bear bobcat turkey vulture
- Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

- Breeding amphibians Non-breeding amphibians (foraging, re-hydration)
- Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/18/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removals)</u>	<u> </u>	<u>618</u>	<u> </u>	<u> </u>
<u>2. Temporary (work pads, pull pads, access)</u>	<u> </u>	<u>1286</u>	<u> </u>	<u> </u>
<u>3.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>4.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>5.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>6.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>7.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-S34 (RO-RA Str 272)

Impact Area (number/name)

11/9/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: _____

Subsystem: _____

Class: _____

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

medium aged white pines some young oaks

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{60}{\text{Trees (> 20')}} \quad \frac{10}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{10}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (20%)		
Overstory	White Pine (80%)		
Shrub	Glossy Buckthorn (30%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- | | | | |
|--------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removals)	_____	<u>18</u>	_____	<u>18 sq. ft.</u>
2. Temporary (matting)	_____	<u>1683</u>	_____	<u>1683 sq. ft.</u>
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Royalston, MA

Project Location (from NOI page 1)

RO-RFA Str 303 and RO-W46

Impact Area (number/name)

11/5/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)


Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: _____ Subsystem: _____

Class: _____ Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Terrestrial area with large beaver dam

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{40}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{15}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (60%)		
Overstory	Oak (40%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 2

Number (or density) of Standing Dead Trees (potential for cavities and perches):

4 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least
- | | | |
|--------------------------------------|------------------------------|----------------------------------------------------------|
| 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- | | | |
|--------------------|------------------------------|-----------------------------|
| 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- (grassland nesting birds)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- | | | |
|---------------------|------------------------------|-----------------------------|
| > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|---------------------|------------------------------|-----------------------------|

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

Appendix A

ROYALSTON, MA WHE PHOTOGRAPHS



Photo #1: Wildlife Habitat Evaluation 11/10/2021, RO-W1.



Photo #2: Wildlife Habitat Evaluation 11/10/2021, RO-W2.



Photo #3: Wildlife Habitat Evaluation 11/10/2021, RO-W3.



Photo #4: Wildlife Habitat Evaluation 11/10/2021, RO-W4.



Photo #5: Wildlife Habitat Evaluation 11/10/2021, RO-W4A.



Photo #6: Wildlife Habitat Evaluation 11/10/2021, RO-W6.



Photo #7: Wildlife Habitat Evaluation 11/10/2021, RO-W6.



Photo #8: Wildlife Habitat Evaluation 11/22/2021, RO-W7.



Photo #9: Wildlife Habitat Evaluation 11/22/2021, RO-W10.



Photo #10: Wildlife Habitat Evaluation 11/29/2021, RO-W11.



Photo #11: Wildlife Habitat Evaluation 11/29/2021, RO-S12.



Photo 12: Wildlife Habitat Evaluation 11/29/2021, RO-W12.



Photo #13: Wildlife Habitat Evaluation 11/29/2021, RO-W13.



Photo 14: Wildlife Habitat Evaluation 11/29/2021, RO-W15.



Photo #15: Wildlife Habitat Evaluation 11/10/2021, RO-W161A.



Photo 16: Wildlife Habitat Evaluation 11/10/2021, RO-W17.



Photo #17: Wildlife Habitat Evaluation 11/10/2021, RO-W18.



Photo 18: Wildlife Habitat Evaluation 11/10/2021, RO-W19.



Photo #19: Wildlife Habitat Evaluation 11/29/2021, RO-W26



Photo 20: Wildlife Habitat Evaluation 11/29/2021, RO-W27.



Photo #21: Wildlife Habitat Evaluation 11/9/2021, RO-W32.



Photo 22: Wildlife Habitat Evaluation 11/9/2021, RO-W35.



Photo #23: Wildlife Habitat Evaluation 11/9/2021, RO-W36.



Photo 24: Wildlife Habitat Evaluation 11/5/2021, RO-W38.



Photo #25: Wildlife Habitat Evaluation 12/2/2021, RO-W41.



Photo 26: Wildlife Habitat Evaluation 12/2/2021, RO-S41.



Photo #27: Wildlife Habitat Evaluation 11/5/2021, RO-W48.



Photo 28: Wildlife Habitat Evaluation 11/5/2021, RO-W49.



Photo #29: Wildlife Habitat Evaluation 11/5/2021, RO-W50.



Photo 30: Wildlife Habitat Evaluation 11/5/2021, RO-W51.



Photo #31: Wildlife Habitat Evaluation 11/5/2021, RO-W52.



Photo 32: Wildlife Habitat Evaluation 11/5/2021, RO-W54.



Photo #33: Wildlife Habitat Evaluation 11/10/2021, RO-W56.



Photo 34: Wildlife Habitat Evaluation 11/10/2021, RO-W57.



Photo #35: Wildlife Habitat Evaluation 11/10/2021, RO-W58.



Photo 36: Wildlife Habitat Evaluation 11/10/2021, RO-W59.



Photo #37: Wildlife Habitat Evaluation 11/10/2021, RO-W60.



Photo 38: Wildlife Habitat Evaluation 11/10/2021, RO-W61.



Photo #39: Wildlife Habitat Evaluation 11/11/2021, RO-W62.



Photo 40: Wildlife Habitat Evaluation 11/11/2021, RO-W64.



Photo #41: Wildlife Habitat Evaluation 11/11/2021, RO-W67.



Photo #42: Wildlife Habitat Evaluation 11/10/2021, RO-S8 (RO RFA STR 203).



Photo #43: Wildlife Habitat Evaluation 11/22/2021, RO-S11 (RFA STR 216).



Photo 44: Wildlife Habitat Evaluation 11/9/2021, RO-S33 (RO RFA STR 271).



Photo #45: Wildlife Habitat Evaluation 11/5/2021, RO-S (RFA STR 303).

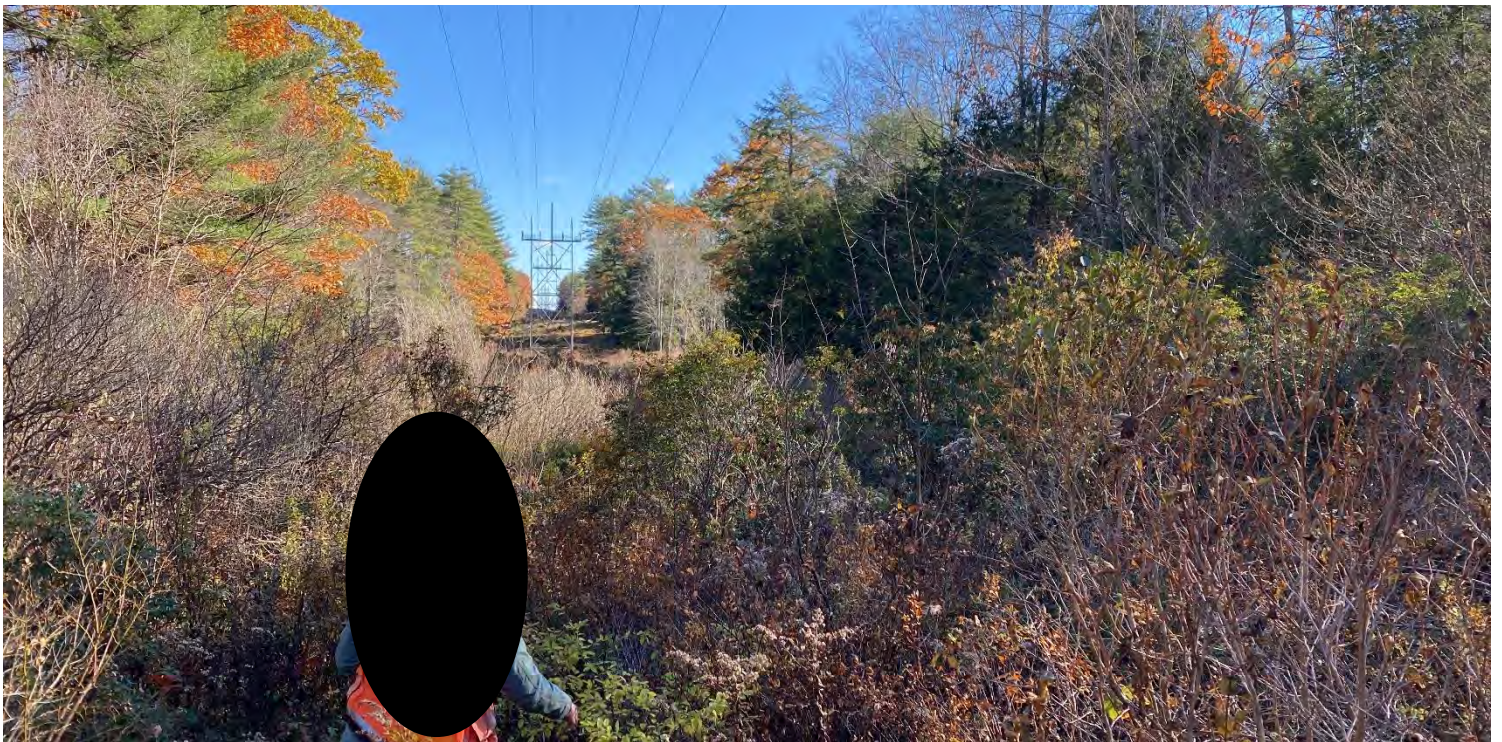


Photo 46: Wildlife Habitat Evaluation 11/5/2021, RO RFA STR 308.



Photo #47: Wildlife Habitat Evaluation 11/9/2021. Boyce Brook.

Appendix A

WARWICK, MA WHE FORMS



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		8821		8821 sq ft
2. Permanent (tree clearing)		2186		2186 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

BVW, Bank, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/23/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrub Shrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge with stream flowing across row, stream has aquatic veg and sandy

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 50 Mosses 80 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (60%)		
Midstory	Hemlock (20%)		
Overstory	Yellow Birch (10%)		
Overstory	Red Oak (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		1,601	3,667	5,268 sq ft
2. Permanent (tree clearing)		1,296	147,822	149,118 sq ft
3. Permanent (cut/fill)			204,772	204,772 sq ft
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

RA, BVW, Bank, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/29/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Riverine

Subsystem: UPerennial

Class: Stream Bed

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young to medium aged hemlocks, red maples, beech, oak, large alder

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 0 Mosses 60 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (20%)		
Overstory	Hemlock (30%)		
Overstory	Red Maple (30%)		
Shrub	Alder (70%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		3,973		3,973 sq ft
2. Permanent (tree clearing)		1,852	11,649	13,501 sq ft
3. Permanent (cut/fill)			12,297	12,297 linear ft
4. Permanent (roads)			125	125 sq ft
5. Permanent (caisson)			79	79 sq ft
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W1: RA, Bank, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/22/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: UNC Bottom

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Rfa slopes steeply to ponded area

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 30 Shrubs (< 20') 0 Woody vines 0 Mosses 10 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (40%)		
Overstory	Red Maple (30%)		
Overstory	Hemlock (20%)		
Shrub	Glossy Buchthorn (15%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 3 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		6,856	565	7,421 sq ft
2. Permanent (tree clearing)		1,075	11,649	12,724 sq ft
3. Permanent (road)			125	125 linear ft
4. Permanent (cut/fill)			12,297	12,297 sq ft
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

RA, Bank, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/22/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matthew Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrubshrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 60 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 40 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (80%)		
Overstory	Red Maple (15%)		

C. Inventory (Soils)

Canton-Chatfield-Hollis complex, 8 to 15 percent slopes, rocky Well drained
 Gravelly fine sandy loam 49
 Texture (upper part) 0
 Depth to Water Table 49

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		2,657		2,657 sq ft
2. Permanent (tree clearing)		2,551		2,551 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W4: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/22/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}$ $\frac{5}{\text{Shrubs (< 20')}$ $\frac{0}{\text{Woody vines}}$ $\frac{0}{\text{Mosses}}$ $\frac{10}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (60%)		
Overstory	Red Maple (30%)		

C. Inventory (Soils)

Chatfield-Hollis complex, 8 to 15 percent slopes, rocky Well drained
 Very gravelly sandy loam Drainage Class
 Texture (upper part) 41
 Depth to Water Table 0
0
 Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		2,548		2,548 sq ft
2. Permanent (tree clearing)		1,560		1,560 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W6: RA, Bank, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/22/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Riverine Subsystem: UPerrenial

Class: UNC Bottom Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input checked="" type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Stream runs across row. Narrow winding

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 0 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (50%)		
Overstory	Beech (20%)		
Midstory	Oak (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		33,123	11,244	44,367 sq ft
2. Permanent (tree clearing)		4,271	13,228	17,499 sq ft
3. Permanent (road)			294	294 linear ft
4. Permanent (cut/fill)		1,124		1,124 sq ft
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W7: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/22/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Regular forestry activity throughout area

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 85 25 0 0 0
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (20%)		
Overstory	Red Maple (70%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways
- Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: WARWICK, W7**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Essex sandy loam, 8 to 15 percent slopes, very stony	Well drained	0	Gravelly fine sandy loam	0
Essex sandy loam, 15 to 25 percent slopes, very stony	Well drained	61	Fine sandy loam	0
Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	Poorly drained	49	Sandy Loam	0
Chatfield-Hollis complex, 15 to 25 percent slopes, rocky	Well drained	71	Slightly decomposed plant material	0
Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	Poorly drained	49	Sandy loam	0
Swansea muck, 0 to 1 percent slopes	Very poorly drained	0	Muck	0
Canton-Chatfield-Hollis complex, 8 to 15 percent slopes, rocky	Well drained	49	Gravelly fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		5508		5508 sq ft
2. Permanent (tree clearing)		931		931 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W9: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/22/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

Person completing form per 310 CMR 10.60(1)(b)

5/17/2022

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}} \quad \frac{25}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{10}{\text{Mosses}} \quad \frac{10}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (40%)		
Overstory	Hemlock (40%)		

C. Inventory (Soils)

Chatfield-Hollis complex, 3 to 8 percent slopes, rocky Well drained
 Drainage Class
 Highly decomposed plant material 38
 Texture (upper part) Depth
0
 Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		522		2997 sq ft.
2. Temporary (matting)		3746		3746 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA
 Project Location (from NOI page 1)
 WA-W10: BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/22/2021
 Date(s) of Site Visit(s) and Data Collection
 Overcast/ No precipitation/ No Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature 

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Forest Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Small amount of cutting includes large pine and snag

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 60 40 0 0 30
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (50%)		
Overstory	Red Maple (30%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: WARWICK, W10**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	Very poorly drained	49	Mucky fine sandy loam	0
Chatfield-Hollis complex, 3 to 8 percent slopes, rocky	Well drained	38	Highly decomposed plant material	0
Scituate fine sandy loam, 3 to 8 percent slopes, very stony	Moderately well drained	61	Loam	51

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		229	11,352	11,581 sq ft
2. Permanent (roads)			351	351 linear ft.
3. Temporary (matting)		1015	742	1,757 sq ft.
4. Permanent (cut/fill)			26,498	26,498 sq ft.
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W11: RA, Bank, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/22/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: UNC Bottom

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Beaver pond and associated wetlands and rfa

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}$ $\frac{10}{\text{Shrubs (< 20')}$ $\frac{0}{\text{Woody vines}}$ $\frac{0}{\text{Mosses}}$ $\frac{15}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Oak (20%)		
Midstory	Hemlock (20%)		
Overstory	Red Maple (15%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

4 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		3,172		3,172 sq ft
2. Permanent (tree clearing)		895		895 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W12: BVW, Bank, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/23/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrub Shrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row, semi perminately flooded bog with cranberries in center of ROW

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 60 Shrubs (< 20') 0 Woody vines 80 Mosses 60 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Hemlock (30%)		
Overstory	Red Maple (30%)		

C. Inventory (Soils)

Scituate fine sandy loam, 3 to 8 percent slopes, very stony
Loam Moderately well drained
 Texture (upper part) Drainage Class
51 61
 Depth to Water Table Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		1,218		1,218 sq ft
2. Permanent (tree clearing)		1,903		1,903 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W15: BVW, Bank, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/23/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: ScrubShrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 80 Mosses 50 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (60%)		
Overstory	White Pine (60%)		
Overstory	Yellow Birch (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
 PART 2 (C) SOILS
 PROJECT LOCATION: WARWICK, W15**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Merrimac fine sandy loam, 15 to 25 percent slopes	Somewhat excessively drained	0	Gravelly fine sandy loam	0
Canton fine sandy loam, 8 to 15 percent slopes, very stony	Well drained	0	Gravelly loamy sand	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		896		896 sq ft
2. Permanent (tree clearing)		552		552 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W16: BVW, Bank, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/23/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: ScrubShrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge with stream running across ROW

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 70 0 30 30
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (50%)		
Overstory	White Pine (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		3,036	13,228	16,264 sq ft.
2. Permanent (cut/fill)		1,124	31,130	32,254 sq ft.
3. Permanent (roads)			294	294 linear ft.
4. Temporary (matting)		5,519	11,243	16,762 sq ft.
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W17, S17: BVW, RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW edge by perennial stream flowing north

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 60 Shrubs (< 20') 0 Woody vines 0 Mosses 20 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Eastern White Pine (50%)		
Overstory	Red Maple (30%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)			3,667	3,667 sq ft
2. Permanent (tree clearing)		246	147,822	148,068 sq ft
3. Permanent (road)			2,442	2,442 linear ft
4. Permanent (cut/fill)			204,772	207,772 sq ft
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/29/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Riverine

Subsystem: UPerennial

Class: Stream Bed

Subclass:

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

mostly hemlock, some red maple, some shrubs in floodplain

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 70 Shrubs (< 20') 0 Woody vines 0 Mosses 60 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Shrub	Witch Hazel (90%)		
Overstory	Hemlock (90%)		
Overstory	Red Maple (10%)		
Overstory	Interrupted Fern (60%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

80 70 10 60
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		803	147,822	148624.5 sq ft
2. Temporary (matting)		3628	3,667	7295 sq ft.
3. Permanent (Roads)			2442	2442 Linear ft
4. Permanent (Cut/fill)			204772	204772 sq ft
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W20: RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/29/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Riverine Subsystem: UPerennial

Class: Stream Bed Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young to medium aged hemlock, white pine, red maple, oak

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{100}{\text{Trees (> 20')}$ $\frac{10}{\text{Shrubs (< 20')}$ $\frac{0}{\text{Woody vines}}$ $\frac{0}{\text{Mosses}}$ $\frac{60}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pines (25%)		
Overstory	Hemlock (40%)		
Overstory	Red Maple (25%)		
Overstory	Oaks (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		5,182	147,822	153,004 sq ft.
2. Temporary (matting)		29,884		29,884 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W22: BVW, RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/23/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

eastern end of wetlands by kidder brook, forested row edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 50 Mosses 50 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (20%)		
Overstory	Hemlock (50%)		
Overstory	Red Oak (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

4 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- Is the impact area part of an emergent marsh at least 1.0 acre in size? Yes No
- (marsh and waterbirds) 2.0 acres in size? Yes No
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		422		422 sq ft.
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W22B: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/23/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrub shrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 20 0 50 50
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Red Oak (30%)		
Overstory	Red Maple (30%)		

C. Inventory (Soils)

Chatfield-Hollis complex, 15 to 25 percent slopes, rocky	Well drained
Slightly decomposed plant material	Drainage Class
Texture (upper part)	71
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		1854		1854 sq ft.
2. Temporary (matting)		4207		4207 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W22C: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/23/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrub shrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 60 Shrubs (< 20') 0 Woody vines 80 Mosses 50 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (20%)		
Overstory	Red Oak (60%)		
Overstory	Red Maple (10%)		

C. Inventory (Soils)

Chatfield-Hollis complex, 3 to 8 percent slopes, rocky Well drained
Highly decomposed plant material 38
 Texture (upper part) 0
 Depth to Water Table 38
 Drainage Class
 Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		2316		2316 sq ft.
2. Temporary (matting)		9125		9125 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W24: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/23/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrub shrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 30 0 80 70
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Oak (30%)		
Overstory	White Pine (50%)		
Overstory	Red Maple (10%)		

C. Inventory (Soils)

Chatfield-Hollis complex, 3 to 8 percent slopes, Well drained
rocky Drainage Class
Highly decomposed plant material 38
Texture (upper part) Depth
0
Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		10,765		10,765 sq ft
2. Permanent (tree clearing)		2,824		2,824 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

BVW, Bank, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/23/2021

Date(s) of Site Visit(s) and Data Collection

clear/ No precipitation/ Little wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

young aged hemlocks and red maples

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 40 Shrubs (< 20') 0 Woody vines 70 Mosses 60 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Understory	Cinnamon Fern (90%)		
Overstory	Hemlock (70%)		
Overstory	Red Maple (30%)		
Understory	Sphagnum (90%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
 PART 2 (C) SOILS
 PROJECT LOCATION: WARWICK, W25**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Chatfield-Hollis complex, 3 to 8 percent slopes, rocky	Well drained	38	Highly decomposed plant material	0
Chatfield-Hollis complex, 25 to 60 percent slopes, rocky	Well drained	48	Gravelly sandy loam	41

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		5,626	402	6,028 sq ft
2. Permanent (tree clearing)		400	14,838	15,238 sq ft
3. Permanent (roads)			246	246 linear ft
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA
 Project Location (from NOI page 1)
 RA, BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/23/2021
 Date(s) of Site Visit(s) and Data Collection
 Clear/ No precipitation/ No wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Patrick Hutchinson
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature 

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrub shrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

forested ROW edge near reservoir, rocky banks

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 70 0 60 60
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (60%)		
Overstory	White Pine (30%)		
Shrub	Mountain Laurel (40%)		
Understory	Sheep Laurel (40%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

4 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		11917	10,247	22,164 sq ft.
2. Temporary (matting)		42785		42785 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W29- BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Partly cloudy/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge near streams leading to reservoir

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 70 Shrubs (< 20') 0 Woody vines 80 Mosses 60 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Red Maple (30%)		
Overstory	Red Oak (20%)		
Overstory	Hemlock (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

4 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: WARWICK, W29**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Pillsbury fine sandy loam, 0 to 8 percent slopes, very stony	Poorly drained	54	Very fine sandy loam	0
Metacomet fine sandy loam, 3 to 8 percent slopes, very stony	Moderately well drained	74	Gravelly loamy fine sand	0
Peacham mucky peat, 0 to 8 percent slopes, very stony	Very poorly drained	0	Highly decomposed plant material	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		44,451	402	44,853 sq ft
2. Permanent (tree clearing)		12,571	14,837	27,408 sq ft
3. Permanent (caissons)			158	158 sq ft
4. Permanent (roads)			415	415 linear ft
5. Permanent (cut/fill)			28,335	28,335 sq ft
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA
 Project Location (from NOI page 1)
 RA, BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/18/0221
 Date(s) of Site Visit(s) and Data Collection
 Partly cloudy/ No precipitation/ No Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Patrick Hutchinson
 Person completing form per 310 CMR 10.60(1)(b) 5/17/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature 

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Forest Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

forested ROW with multiple streams converging on ROW, leading to reservoir

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 60 Shrubs (< 20') 0 Woody vines 60 Mosses 80 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Red Maple (30%)		
Overstory	Red Oak (30%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

8 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		3,186		3,186 sq ft
2. Permanent (tree clearing)		1,136		1,136 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Partly cloudy/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature 

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Forest Subclass: _____

Hydrology/Water Regime

- Permanently flooded
- Intermittently exposed
- Semi-permanently flooded
- Seasonally flooded
- Saturated
- Temporarily flooded
- Intermittently flooded
- Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 10 0 20 20
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (30%)		
Overstory	Hemlock (30%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		1,594		1,594 sq ft
2. Permanent (tree clearing)		152		152 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W33: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge with stream flowing northeast across row

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 60 Shrubs (< 20') 0 Woody vines 30 Mosses 30 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Beech (30%)		
Overstory	Red Oak (20%)		
Overstory	Hemlock (30%)		

C. Inventory (Soils)

Chichester fine sandy loam, 15 to 25 percent slopes, very stony Well drained
 Loamy fine sand Drainage Class
 Texture (upper part) 50
0 Depth
 Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

3 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		777	7492	8269 sq ft.
2. Permanent (roads)			430.5	430.5 sq ft.
3. Temporary (matting)		2368	449	2817 sq ft.
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W35: RA, Bank, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrubshrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 20 0 10 0
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Eastern Hemlock (70%)		
Midstory	American Beech (20%)		
Shrub	Winterberry (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		257		257 sq ft.
2. Temporary (matting)		145		145 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W36: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrubshrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 0 Mosses 0 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Black Birch (90%)		
	Speckled Alder (10%)		

C. Inventory (Soils)

Canton fine sandy loam, 15 to 25 percent slopes, very stony Well drained
 Gravelly loam 56
 Texture (upper part) 0
 Depth to Water Table 56
 Drainage Class
 Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		45		45 sq ft.
2. Temporary (matting)		2354		2354 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W37: RA, Bank, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Matt Burne

Weather Conditions During Site Visit (if snow cover, include depth)

Clear/ No precipitation/ No Wind

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrubshrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 95 0 0 5 0
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Eastern Hemlock (60%)		
	Eastern White Pine (20%)		
Overstory	Red Maple (10%)		
	American Beech (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		1,930		1,930 sq ft
2. Permanent (tree clearing)		719		719 sq ft
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

WA-W38: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrubshrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 0 Shrubs (< 20') 0 Woody vines 5 Mosses 5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Eastern White Pine (50%)		
Midstory	Red Oak (50%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
 PART 2 (C) SOILS
 PROJECT LOCATION: WARWICK, W38**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Scituate fine sandy loam, 3 to 8 percent slopes, very stony	Moderately well drained	61	Loam	51
Canton fine sandy loam, 8 to 15 percent slopes, very stony	Well drained	0	Gravelly loamy sand	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		132	10209	10,341 sq ft.
2. Permanent (road)			393	393 linear ft.
3. Permanent (cut/fill)			20516	20,516 sq ft.
4. Temporary (matting)		378	1397	1775 sq ft.
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

RA, BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge with perennisl stream flowing south across ROW, deep and wide enough for small fish



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 80 Mosses 50 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Red Maple (30%)		
Overstory	Red Oak (5%)		
Overstory	Birch (5%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

8 4 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree removal)		3647		3647 sq ft.
2. Temporary (matting)		11100		11100 sq ft.
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Warwick, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/18/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/17/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrubshrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested ROW edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 75 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 75 Mosses 50 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Red Maple (40%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

4 2 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
 PART 2 (C) SOILS
 PROJECT LOCATION: WARWICK, W41**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Scituate fine sandy loam, 3 to 8 percent slopes, very stony	Moderately well drained	61	Fine Sandy Loam	0
Canton fine sandy loam, 8 to 15 percent slopes, very stony	Well drained	0	Loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

Appendix A

WARWICK, MA WHE PHOTOGRAPHS



Photo #1: Wildlife Habitat Evaluation 11/18/2021, PVP.



Photo #2: Wildlife Habitat Evaluation 11/23/2021, Vernal Pool.



Photo #3: Wildlife Habitat Evaluation 11/22/2021,WA-W1.



Photo #4: Wildlife Habitat Evaluation 11/22/2021,WA-W2.



Photo #5: Wildlife Habitat Evaluation 11/22/2021,WA-W4.



Photo #6: Wildlife Habitat Evaluation 11/22/2021,WA-W6.



Photo #7: Wildlife Habitat Evaluation 11/22/2021,WA-W7.



Photo #8: Wildlife Habitat Evaluation 11/22/2021,WA-W7 100.



Photo #9: Wildlife Habitat Evaluation 11/22/2021,WA-W9.



Photo #10: Wildlife Habitat Evaluation 11/22/2021,WA-W10.



Photo #11: Wildlife Habitat Evaluation 11/22/2021,WA-W11.



Photo #12: Wildlife Habitat Evaluation 11/23/2021,WA-W12.



Photo #13: Wildlife Habitat Evaluation 11/23/2021, WA-S13/W13.



Photo #14: Wildlife Habitat Evaluation 11/23/2021, WA-W15.



Photo #15: Wildlife Habitat Evaluation 11/23/2021,WA-W16.



Photo #16: Wildlife Habitat Evaluation 11/18/2021,WA-S17.



Photo #17: Wildlife Habitat Evaluation 11/18/2021,WA-W17/S17.



Photo #18: Wildlife Habitat Evaluation 11/29/2021,WA-W18.



Photo #19: Wildlife Habitat Evaluation 11/29/2021, WA-W20.



Photo #20: Wildlife Habitat Evaluation 11/29/2021, WA-W21.



Photo #21: Wildlife Habitat Evaluation 11/23/2021, WA-W22.



Photo #22: Wildlife Habitat Evaluation 11/23/2021, WA-W22B.



Photo #23: Wildlife Habitat Evaluation 11/23/2021, WA-W22C.



Photo #24: Wildlife Habitat Evaluation 11/23/2021, WA-W24.



Photo #25: Wildlife Habitat Evaluation 11/23/2021, WA-W25.



Photo #26: Wildlife Habitat Evaluation 11/23/2021, WA-W27 & S28.



Photo #27: Wildlife Habitat Evaluation 11/18/2021, WA-W29.



Photo #28: Wildlife Habitat Evaluation 11/18/2021, WA-W29 & S29.



Photo #29: Wildlife Habitat Evaluation 11/18/2021, WA-W30 and W31.



Photo #30: Wildlife Habitat Evaluation 11/18/2021, WA-W33 & S33.



Photo #31: Wildlife Habitat Evaluation 11/18/2021,WA-W35.



Photo #32: Wildlife Habitat Evaluation 11/18/2021,WA-W36.



Photo #33: Wildlife Habitat Evaluation 11/18/2021, WA-W37.



Photo #34: Wildlife Habitat Evaluation 11/18/2021, WA-W38.



Photo #35: Wildlife Habitat Evaluation 11/18/2021, WA-W40 & S40.



Photo #36: Wildlife Habitat Evaluation 11/18/2021, WA-W41.

Appendix A

WINCHENDON, MA WHE FORMS

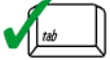


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		2680		2680
2. Temporary (work pads, tree clearing, access)		5681		5681
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA
 Project Location (from NOI page 1)
 BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/17/2021
 Date(s) of Site Visit(s) and Data Collection
 Overcast/ No precipitation/ No Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/16/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{10}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{0}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
	Red Maple (40%)		
	Eastern Hemlock (40%)		
	Red Pine (10%)		
	Highbush blueberry (10%)		

C. Inventory (Soils)

Colton gravelly loamy sand, 3 to 8 percent slopes	Excessively drained
Fine sand	Drainage Class
Texture (upper part)	Depth
46	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 3 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		5426		5426
2. Temporary (work pads, tree clearing, access)		16219		16219
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA
 Project Location (from NOI page 1)
 BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/17/2021
 Date(s) of Site Visit(s) and Data Collection
 Overcast/ No precipitation/ No Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/16/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 20 Shrubs (< 20') 0 Woody vines 5 Mosses 5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
	Red Maple (40%)		
	Eastern Hemlock (40%)		
	Highbush Blueberry (15%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
(turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
10.0 acres in size? Yes No
25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
100 acres in size? Yes No
250 acres in size? Yes No
500 acres in size? Yes No
- (grassland nesting birds) > 1.0 acre in size? Yes No
(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: WINCHENDON, W5**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained	0	Highly decomposed plant material	0
Colton gravelly loamy sand, 3 to 8 percent slopes	Excessively drained	0	Fine sand	46

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		559		559
2. Temporary (work pads, tree clearing, access)		1377		1377
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA
 Project Location (from NOI page 1)
 BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 12/2/2021
 Date(s) of Site Visit(s) and Data Collection
 Overcast/ Little rain/ No Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Patrick Hutchinson
 Person completing form per 310 CMR 10.60(1)(b) 5/16/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|--------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{50}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{50}{\text{Mosses}} \quad \frac{50}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Hemlock (60%)		
Overstory	Red Maple (30%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: WINCHENDON, W6**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0
Colton gravelly loamy sand, 3 to 8 percent slopes	Excessively drained	0	Fine sand	46

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		1325		1325
2. Temporary (work pads, tree clearing, access)		0		0
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF


Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

12/2/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 50 0 50 50
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
	Red Oak (20%)		
	Hemlock (60%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained
Fine sandy loam	Drainage Class
Texture (upper part)	0
64	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 1 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- Is the impact area part of a wetland complex at least 2.5 acres in size? Yes No
- (turtles, frogs, waterfowl, mammals)
- 5.0 acres in size? Yes No
- 10.0 acres in size? Yes No
- 25.0 acres in size? Yes No

For upland resource areas is the impact area part of contiguous forested habitat at least

- (forest interior nesting birds)
- 50 acres in size? Yes No
- 100 acres in size? Yes No
- 250 acres in size? Yes No
- 500 acres in size? Yes No
- (grassland nesting birds)
- > 1.0 acre in size? Yes No
- (special habitat such as gallery floodplain forest, alder thicket, etc.)
- > 1.0 acre in size? Yes No

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		253		253
2. Temporary (work pads, tree clearing, access)		0		0
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA
 Project Location (from NOI page 1)
 BVW, RA, BLSF Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/17/2021
 Date(s) of Site Visit(s) and Data Collection
 Overcast/ Little precipitation/ Little Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/16/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Forest Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------------|-------------------------------------------------|
| <input checked="" type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{10}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{0}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (70%)		
Overstory	Red Oak (20%)		
Shrub	Silky Dog Wood (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		96		96
2. Temporary (work pads, tree clearing, access)		409		409
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA

Project Location (from NOI page 1)

BVW, RA, Bank, BLSF, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/17/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 10 Mosses 0 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Eastern Hemlock (70%)		
Overstory	Eastern White Pine (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 1
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		2016		2016
2. Temporary (work pads, tree clearing, access)		16391		16391
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Burnam

Typed or Printed Name



Wildlife Habitat Protection Guidance


Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA
 Project Location (from NOI page 1)
 BVW, Proposed work pad in the area and structure replacement.
 Impact Area (number/name)
 11/17/2021
 Date(s) of Site Visit(s) and Data Collection
 Partly Cloudy/ No precipitation/ No Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/16/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated


 Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____
 Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 Trees (> 20') 5 Shrubs (< 20') 0 Woody vines 5 Mosses 0 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Eastern White Pine (50%)		
Overstory	Red Maple (30%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony Moderately well drained
 Fine sandy loam 64
 Texture (upper part) 0
 Depth to Water Table 64
 Drainage Class
 Depth

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		3671		3671
2. Temporary (work pads, tree clearing, access)		926		926
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Burnham

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/5/2021

Date(s) of Site Visit(s) and Data Collection

Clear/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Burnam

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 20 0 10 5
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (35%)		
Overstory	Hemlock (40%)		
Overstory	Red Oak (5%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: WINCHENDON, W26**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Colton gravelly loamy sand, 8 to 15 percent slopes	Excessively drained	0	Gravelly sand	0
Colton gravelly loamy sand, 3 to 8 percent slopes	Excessively drained	0	Fine sand	46

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		1770		1770
2. Temporary (work pads, tree clearing, access)		4474		4474
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

12/2/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ Little rain/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

forested row edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 Trees (> 20') 30 Shrubs (< 20') 0 Woody vines 50 Mosses 50 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (30%)		
Overstory	Red Oak (30%)		
Midstory	Hemlock (10%)		

C. Inventory (Soils)

Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained
Fine sandy loam	Drainage Class
Texture (upper part)	64
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

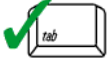


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		1379		1379
2. Temporary (work pads, tree clearing, access)		9389		9389
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/3/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Forest Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{70}{\text{Trees (> 20')}$ $\frac{10}{\text{Shrubs (< 20')}$ $\frac{0}{\text{Woody vines}}$ $\frac{0}{\text{Mosses}}$ $\frac{20}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (80%)		
Shrub	Hemlock (25%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
 PART 2 (C) SOILS
 PROJECT LOCATION: WINCHENDON, W30**

www.bscgroup.com

Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Skerry fine sandy loam, 3 to 8 percent slopes	Moderately well drained	0	Very gravelly sandy loam	0
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

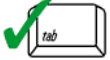


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/16/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		7563		7563
2. Temporary (work pads, tree clearing, access)		14957		14957
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/3/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Scrubshrub Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 30 Shrubs (< 20') 0 Woody vines 0 Mosses 10 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (50%)		
Overstory	Red Maple (50%)		

C. Inventory (Soils)

Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very poorly drained
Highly decomposed plant material	Drainage Class
Texture (upper part)	0
0	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		25265		25265
2. Temporary (work pads, tree clearing, access)		40038		40038
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

12/2/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Patrick Hutchinson

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine Subsystem: _____

Class: Forest Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 90 20 0 5 5
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	White Pine (60%)		
Overstory	Red Maple (30%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

5 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: WINCHENDON, W33**

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Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony	Very poorly drained	0	Stratified gravel to sand	0
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very Poorly Drained	0	Highly decomposed plant material	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Permanent (tree clearing)		5938		5938
2. Temporary (work pads, tree clearing, access)		18716		18716
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Winchendon, MA

Project Location (from NOI page 1)

BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

11/3/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Forest

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

ROW lined with 8-10" dbh trees, dom red maple very little structure

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 80 Trees (> 20') 10 Shrubs (< 20') 0 Woody vines 5 Mosses 5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Fir (80%)		
Overstory	White Pine (30%)		
Overstory	Hemlock (15%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 2 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

**DETAILED WILDLIFE HABITAT EVALUATION
PART 2 (C) SOILS
PROJECT LOCATION: WINCHENDON, W34**

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Soil Survey Unit	Drainage Class	Depth (cm)	Surface Texture	Depth to Water Table
Becket-Skerry association, 0 to 15 percent slopes, extremely stony	Moderately well drained	64	Fine sandy loam	0
Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	Very Poorly Drained	0	Highly decomposed plant material	0

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019

Appendix A

WINCHENDON, MA WHE PHOTOGRAPHS



Photo #1: Wildlife Habitat Evaluation 11/17/2021, WIN-W1.



Photo #2: Wildlife Habitat Evaluation 11/17/2021, WIN-W5.



Photo #3: Wildlife Habitat Evaluation 12/2/2021, WIN-W6.



Photo #4: Wildlife Habitat Evaluation 12/2/2021, WIN-W7.



Photo #5: Wildlife Habitat Evaluation 11/17/2021, WIN-W8.



Photo #6: Wildlife Habitat Evaluation 11/17/2021, WIN-W10.



Photo #7: Wildlife Habitat Evaluation 11/17/2021, WIN-W14.



Photo #8: Wildlife Habitat Evaluation 11/5/2021, WIN-W26.



Photo #9: Wildlife Habitat Evaluation 12/2/2021, WIN-W28.



Photo #10: Wildlife Habitat Evaluation 11/3/2021, WIN-W30.



Photo #11: Wildlife Habitat Evaluation 11/3/2021, WIN-W31.



Photo #12: Wildlife Habitat Evaluation 11/10/2021, WIN-W33.



Photo #13: Wildlife Habitat Evaluation 11/3/2021, WIN-W34.

Appendix A

WESTMINSTER, MA WHE FORMS

ASSOCIATED RESOURCE AREAS COMBINED TOTAL
PROJECT LOCATION: WESTMINSTER, RFA482, STR484-1 TO 483
SEE INDIVIDUAL APPENDIX B FORMS

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Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
Permanent (structures)			158	158 sq. ft.
Permanent (tree removals)		2,224	34,429	36,653 sq. ft.
Permanent (roads)			302	302 linear ft.
Permanent (cut/fill)			44,393	44,393 sq. ft.
Temporary (matting)		1,809	4,106	5,915 sq. ft.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Impacts combined with WE- RFA 482

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Westminster, MA

Project Location (from NOI page 1)

RA, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

10/28/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ LT Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Barnum

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Riverine

Subsystem: _____

Class: Unperennial

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Some large oak and pine within curing area

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{80}{\text{Trees (> 20')}} \quad \frac{15}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{0}{\text{Mosses}} \quad \frac{5}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “**” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (75%)		
Overstory	White Pine (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

4 3 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

See below

Size of Area Being Impacted

5/11/2022

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Temporary (matting)		1,809	4,106	5,915 sq. ft.
2. Permanent (structure)			158	158 sq ft
3. Permanent (tree removals)		2,224	34,429	36,653 sq. ft
4. Permanent (cut/fill)			44,393	44,393 sq. ft
5. Permanent (roads)			302	302 linear ft
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA which also includes a photographic log.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.


Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Sarah Barnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Westminster, MA
 Project Location (from NOI page 1)
 WE-RFA 482
 Impact Area (number/name)
 10/28/2021
 Date(s) of Site Visit(s) and Data Collection
 Partly Cloudy/ No precipitation/ LT Wind
 Weather Conditions During Site Visit (if snow cover, include depth)
 Matt Burne
 Person completing form per 310 CMR 10.60(1)(b) 5/16/2022
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature 

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Riverine Subsystem: _____
 Class: _____ Subclass: _____

Hydrology/Water Regime

- | | |
|---------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Permanently flooded | <input checked="" type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.
Use a terrestrial classification system such as one of the two listed below:

- a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____

Vegetation Description _____

Physical Description _____



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 70 20 0 10 0
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (60%)		
	Hemlock (10%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
Texture (upper part) _____ Depth _____
Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Westminster, MA

Project Location (from NOI page 1)

WE-W1: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

10/28/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrubshrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Some large oak and pine within curing area

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{75}{\text{Trees (> 20')}} \quad \frac{25}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{15}{\text{Mosses}} \quad \frac{15}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “**” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (20%)		
Overstory	Maple Red (20%)		
Overstory	White Pine (40%)		
Overstory	Hemlock (40%)		
Shrub	Alder (20%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 3 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project

Project Name

Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA

Location

Please refer to breakdown of permanent and temporary impacts below.

5/11/2022

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
<u>1. Permanent (tree removal)</u>	_____	<u>3343</u>	_____	<u>3343 sq ft.</u>
<u>2. Temporary (matting)</u>	_____	<u>1243</u>	_____	<u>1243 sq ft.</u>
<u>3.</u>	_____	_____	_____	_____
<u>4.</u>	_____	_____	_____	_____
<u>5.</u>	_____	_____	_____	_____
<u>6.</u>	_____	_____	_____	_____
<u>7.</u>	_____	_____	_____	_____

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

[Signature]
Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Matt Burne
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Westminster, MA

Project Location (from NOI page 1)

WE-W2: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

10/28/2021

Date(s) of Site Visit(s) and Data Collection

Overcast/ No precipitation/ No Wind

Weather Conditions During Site Visit (if snow cover, include depth)

Matt Burne

5/11/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Scrubshrub

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

Most tree work is to shrubs in row and oak edge

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{60}{\text{Trees (> 20')}} \quad \frac{50}{\text{Shrubs (< 20')}} \quad \frac{0}{\text{Woody vines}} \quad \frac{25}{\text{Mosses}} \quad \frac{20}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “**” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Oak (90%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 3 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|-------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A1/B2 Line 69kV Rebuild Project
Project Name
Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, MA
Location
Please refer to breakdown of permanent and temporary impacts below. 5/11/2022
Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Table with 5 columns: Name, Waterbody/Waterway, Wetland, Upland*, Total Area. Contains 7 rows of impact data with numerical values.

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Please refer to attached Wildlife Habitat Evaluation for all the towns in MA.

Series of horizontal lines for text input.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1)(b))

Sarah Burnum
Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Westminster, MA

Project Location (from NOI page 1)

WE-W3: BVW, Proposed work pad in the area and structure replacement.

Impact Area (number/name)

10/28/2021

Date(s) of Site Visit(s) and Data Collection

Partly Cloudy/ No precipitation/ Windy

Weather Conditions During Site Visit (if snow cover, include depth)

Sarah Burnum

5/16/2022

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine

Subsystem: _____

Class: Emergent

Subclass: _____

Hydrology/Water Regime

Permanently flooded

Saturated

Intermittently exposed

Temporarily flooded

Semi-permanently flooded

Intermittently flooded

Seasonally flooded

Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name

Vegetation Description

ROW lined with 8-10" dbh trees, dom red maple very little structure

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: $\frac{90}{\text{Trees (> 20')}} \quad \frac{90}{\text{Shrubs (< 20')}} \quad \frac{1}{\text{Woody vines}} \quad \frac{5}{\text{Mosses}} \quad \frac{30}{\text{Herbaceous}}$

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “**” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Overstory	Red Maple (60%)		
Overstory	White Pine (20%)		
Shrub	Winter Berry (60%)		

C. Inventory (Soils)

Soil Survey Unit _____ Drainage Class _____
 Texture (upper part) _____ Depth _____
 Depth to Water Table _____

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

Abundant Present Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

Abundant Present Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

Present Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

0 0 0 0
6-12" dbh 12-18" dbh 18-24" dbh > 24" dbh

Number of Tree Cavities in trunks or limbs of:

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

Abundant Present Absent

Cover/Perches/Basking/Denning/Nesting Habitat

Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

Rock piles, crevices, or hollow logs suitable for:

otter mink porcupine bear bobcat turkey vulture

Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

Present Absent

Standing water present at least part of the growing season, suitable for use by

Breeding amphibians Non-breeding amphibians (foraging, re-hydration)

Turtles Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

Present Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

Present Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

Present Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

Present Absent

Undercut or overhanging banks (small mammals, mink, weasels)

Present Absent

Vertical sandy banks (bank swallow, kingfisher)

Present Absent

Areas of ice-free open water in winter

Present Absent

Mud flats

Present Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

Present Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

Present Absent

Bank swallow colony

Present Absent

Nest(s) present of

Bald Eagle Osprey Great Blue Heron

Den(s) present of

Otter Mink Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- 200' of Great Blue Heron or osprey nest(s)
- 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm Present Absent

Flooded > 25 cm (pied-billed grebe) Present Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm Present Absent

Flooded > 25 cm (least bittern, common moorhen) Present Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? Yes No

(marsh and waterbirds) 2.0 acres in size? Yes No

5.0 acres in size? Yes No

10.0 acres in size? Yes No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|-------------------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------------|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- Evidence of significant chemical contamination
- Evidence of significant levels of dumping
- Evidence of significant erosion or sedimentation problems
- Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- Disturbance from roads or highways
- Other human disturbance
- Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8

Appendix A

WESTMINSTER, MA WHE PHOTOGRAPHS



Photo #1: Wildlife Habitat Evaluation 10/28/2021, WE-W1.



Photo #2: Wildlife Habitat Evaluation 10/28/2021, WE-W2.



Photo #3: Wildlife Habitat Evaluation 10/28/2021, WE-W3..



Photo #4: Wildlife Habitat Evaluation 10/28/2021, WE-StR 484-1 to 483.



Photo #5: Wildlife Habitat Evaluation 10/28/2021, WE-RFA482.

RMAT Climate Resilience Design Standards Tool Project Report

A1B2-Refurbishment Project: 1

Date Created: 3/21/2022 1:06:11 PM

Created By: Priyanka

[Download](#)

Project Summary

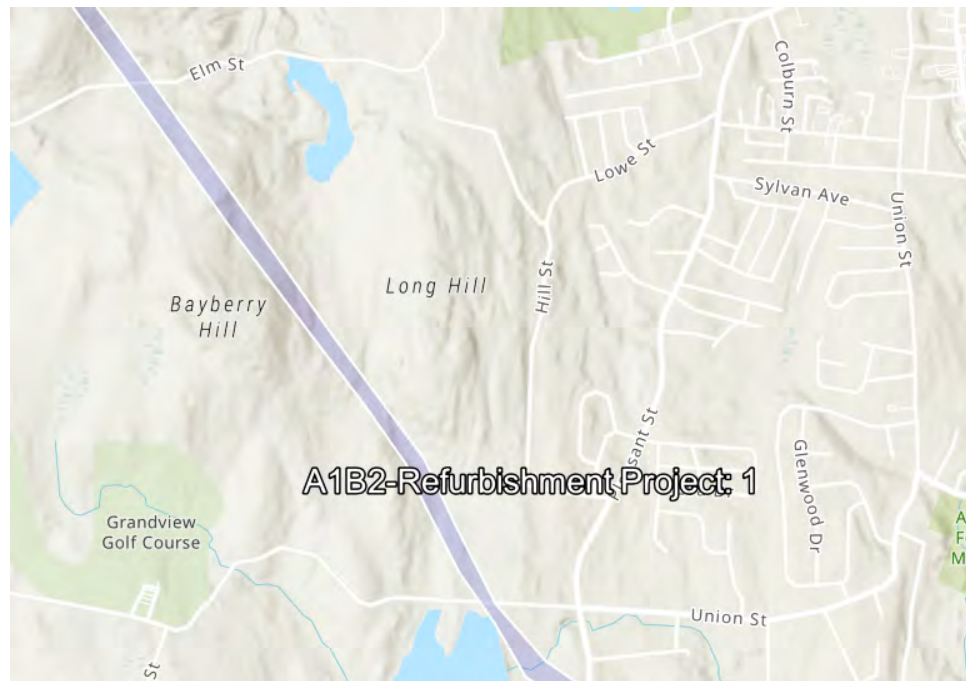
[Link to Project](#)

Estimated Construction Cost: \$100000000.00

End of Life Year: 2075

Project within mapped Environmental Justice population: Yes

Ecosystem Benefits	Scores
Project Score	Low
Exposure	Scores
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Infrastructure	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge Infrastructure					
Extreme Precipitation Infrastructure	2070			50-yr (2%)	Tier 3
Extreme Heat Infrastructure	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Project site has a history of riverine flooding
- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Project is potentially susceptible to riverine erosion
- Project is more than 500ft from a waterbody

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing trees are being removed as part of the proposed project
- Less than 10% of the existing project site has canopy cover
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site

Scoring Rationale - Asset Risk Scoring

Asset - Infrastructure

Primary asset criticality factors influencing risk ratings for this asset:

- Asset may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Loss/inoperability of the asset would have regional impacts
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: Infrastructure

Infrastructure

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Tidal Benchmarks: No

Stillwater Elevation: No

Design Flood Elevation (DFE): No

Wave Heights: No

Duration of Flooding: No

Design Flood Velocity: No

Wave Forces: No

Scour or Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070

Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Total Precipitation Depth for 24-hour Design Storms: Yes

Peak Intensity for 24-hour Design Storms: Yes

Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes

Duration of Flooding for Design Storm: Yes

Flood Pathways: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
 Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

- Annual/Summer/Winter Average Temperature:** Yes
- Heat Index:** Yes
- Days Per Year With Max Temperature > 95°F:** Yes
- Days Per Year With Max Temperature > 90°F:** Yes
- Days Per Year With Max Temperature < 32°F:** Yes
- Number of Heat Waves Per Year:** Yes
- Average Heat Wave Duration (Days):** Yes
- Cooling Degree Days (Base = 65°F):** No
- Heating Degree Days (Base = 65°F):** No
- Growing Degree Days:** No

Project Inputs

Core Project Information

<p>Name:</p> <p>Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?</p> <p>Location of Project:</p> <p>Estimated Capital Cost:</p> <p>Who is the Submitting Entity?</p> <p>Is this project being submitted as part of a state grant application?</p> <p>Which grant program?</p> <p>What stage are you in your project lifecycle?</p> <p>Is climate resiliency a core objective of this project?</p> <p>Is this project being submitted as part of the state capital planning process?</p> <p>Is this project being submitted as part of a regulatory review process or permitting?</p> <p>Brief Project Description:</p>	<p>A1B2-Refurbishment Project: 1 2075</p> <p>Sterling \$100,000,000 Private Other National Grid Michael (Tyrell) No</p> <p>Permitting No No Yes</p> <p>NEP owns and operates double-circuit 69 kV lines (A1 and B2 lines) that begin at NEP’s existing Vernon #13 switchyard in Vernon, Vermont and cross through the towns of Hinsdale and Winchester, NH before continuing through a number of towns in MA and terminating at NEP’s Pratts Junction #225 Substation located in Sterling, MA. Within Massachusetts, a distance of approximately 54.26 miles go through the municipalities of Warwick, Royalton, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling in Massachusetts. The A1/B2 lines were originally constructed in 1909, and the original lattice structures remain along the majority of line. The lines were reconducted in the 1920s and were reinsulated in 2004. Structures and wires need to be replaced due to asset condition and aging infrastructure. Although the new A1/B2 Transmission Lines will operate at 69 kV when they are first placed into service, they are being designed and built to support operation at 115 kV at some point during their expected life.</p>
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Project Submission Comments:

Project Ecosystem Benefits

Factors Influencing Output

- ✓ Project filters stormwater using green infrastructure
- ✓ Project provides pollinator habitat
- ✓ Project provides recreation

Factors to Improve Output

- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	Yes
Improves water quality	No

Promotes decarbonization	Maybe
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	Maybe
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	Yes
Provides recreation	Yes
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	Yes
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Infrastructure
 Asset Type: Utility Infrastructure
 Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
 Construction Type: Major Repair/Retrofit
 Construction Year: 2025
 Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Less than 100,000 people

Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.

The infrastructure is located in an environmental justice community, and/or provides some services to vulnerable populations (services are not available elsewhere to same population)

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain most government services, while some services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

Loss of confidence in government agency

Report Comments

N/A

RMAT Climate Resilience Design Standards Tool Project Report

A1-B2- Refurbishment Project: 2

Date Created: 3/21/2022 2:14:32 PM

Created By: Priyanka

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Project Summary

[Link to Project](#)

Estimated Construction Cost: \$100000000.00
 End of Life Year: 2075
 Project within mapped Environmental Justice population: Yes

Ecosystem Benefits	Scores
Project Score	Low
Exposure	Scores
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Transmission Line	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge Transmission Line					
Extreme Precipitation Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat Transmission Line	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Project site has a history of riverine flooding
- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 500ft of a waterbody and less than 20ft above the waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing trees are being removed as part of the proposed project
- Between 10% and 40% of the existing project site has canopy cover
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site

Scoring Rationale - Asset Risk Scoring

Asset - Transmission Line

Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Loss/inoperability of the asset would have regional impacts
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: Transmission Line

Infrastructure

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Tidal Benchmarks: No

Stillwater Elevation: No

Design Flood Elevation (DFE): No

Wave Heights: No

Duration of Flooding: No

Design Flood Velocity: No

Wave Forces: No

Scour or Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070

Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Total Precipitation Depth for 24-hour Design Storms: Yes

Peak Intensity for 24-hour Design Storms: Yes

Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes

Duration of Flooding for Design Storm: Yes

Flood Pathways: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
 Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

- Annual/Summer/Winter Average Temperature:** Yes
- Heat Index:** Yes
- Days Per Year With Max Temperature > 95°F:** Yes
- Days Per Year With Max Temperature > 90°F:** Yes
- Days Per Year With Max Temperature < 32°F:** Yes
- Number of Heat Waves Per Year:** Yes
- Average Heat Wave Duration (Days):** Yes
- Cooling Degree Days (Base = 65°F):** No
- Heating Degree Days (Base = 65°F):** No
- Growing Degree Days:** No

Project Inputs

Core Project Information

<p>Name:</p> <p>Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?</p> <p>Location of Project:</p> <p>Estimated Capital Cost:</p> <p>Who is the Submitting Entity?</p> <p>Is this project being submitted as part of a state grant application? Which grant program?</p> <p>What stage are you in your project lifecycle?</p> <p>Is climate resiliency a core objective of this project?</p> <p>Is this project being submitted as part of the state capital planning process?</p> <p>Is this project being submitted as part of a regulatory review process or permitting?</p> <p>Brief Project Description:</p>	<p>A1-B2- Refurbishment Project: 2075</p> <p>Fitchburg, Westminster \$100,000,000 Private Other National Grid Michael Tyrrell (Michael.Tyrrell@nationalgrid.com) No</p> <p>Permitting No No Yes</p> <p>NEP owns and operates double-circuit 69 kV lines (A1 and B2 lines) that begin at NEP's existing Vernon #13 switchyard in Vernon, Vermont and cross through the towns of Hinsdale and Winchester, NH before continuing through a number of towns in MA and terminating at NEP's Pratts Junction #225 Substation located in Sterling, MA. Within Massachusetts, a distance of approximately 54.26 miles go through the municipalities of Warwick, Royalton, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling in Massachusetts. The A1/B2 lines were originally constructed in 1909, and the original lattice structures remain along the majority of line. The lines were reconductored in the 1920s and were reinsulated in 2004. Structures and wires need to be replaced due to asset condition and aging infrastructure. Although the new A1/B2 Transmission Lines will operate at 69 kV when they are first placed into service, they are being designed and built to support operation at 115 kV at some point during their expected life.</p>
<p>Project Submission Comments:</p>	

Project Ecosystem Benefits

Factors Influencing Output

- ✓ Project filters stormwater using green infrastructure
- ✓ Project provides pollinator habitat
- ✓ Project provides recreation

Factors to Improve Output

- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	Yes

Improves water quality	No
Promotes decarbonization	Maybe
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	Maybe
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	Yes
Provides recreation	Yes
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	Yes
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Transmission Line
 Asset Type: Utility Infrastructure
 Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
 Construction Type: Major Repair/Retrofit
 Construction Year: 2025
 Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Less than 100,000 people

Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.

The infrastructure is located in an environmental justice community, and/or provides some services to vulnerable populations (services are not available elsewhere to same population)

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain most government services, while some services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

Loss of confidence in government agency

Report Comments

N/A

RMAT Climate Resilience Design Standards Tool Project Report

A1-B2_Refurbishment Project: 3

Date Created: 3/21/2022 3:01:19 PM

Created By: Priyanka

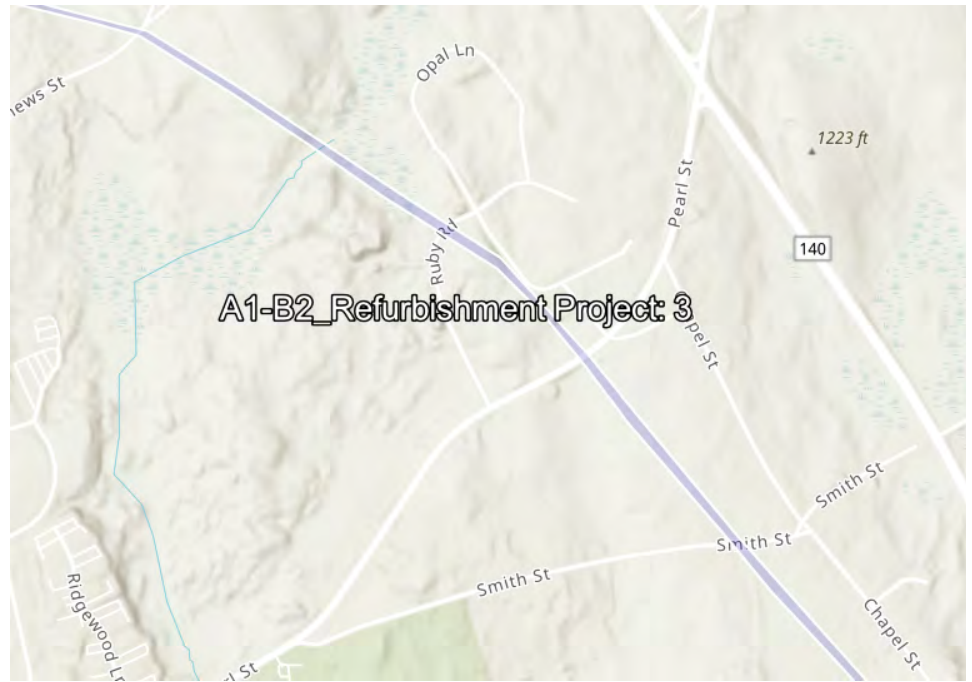
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Project Summary

[Link to Project](#)

Estimated Construction Cost: \$100000000.00
 End of Life Year: 2075
 Project within mapped Environmental Justice population: Yes

Ecosystem Benefits	Scores
Project Score	Low
Exposure	Scores
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Transmission Line	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge Transmission Line					
Extreme Precipitation Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat Transmission Line	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Project site has a history of riverine flooding
- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Project is more than 500ft from a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing trees are being removed as part of the proposed project
- Less than 10% of the existing project site has canopy cover
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site

Scoring Rationale - Asset Risk Scoring

Asset - Transmission Line

Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Loss/inoperability of the asset would have regional impacts
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: Transmission Line

Infrastructure

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Tidal Benchmarks: No

Stillwater Elevation: No

Design Flood Elevation (DFE): No

Wave Heights: No

Duration of Flooding: No

Design Flood Velocity: No

Wave Forces: No

Scour or Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070

Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Total Precipitation Depth for 24-hour Design Storms: Yes

Peak Intensity for 24-hour Design Storms: Yes

Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes

Duration of Flooding for Design Storm: Yes

Flood Pathways: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Annual/Summer/Winter Average Temperature: Yes

Heat Index: Yes

Days Per Year With Max Temperature > 95°F: Yes

Days Per Year With Max Temperature > 90°F: Yes

Days Per Year With Max Temperature < 32°F: Yes

Number of Heat Waves Per Year: Yes

Average Heat Wave Duration (Days): Yes

Cooling Degree Days (Base = 65°F): No

Heating Degree Days (Base = 65°F): No

Growing Degree Days: No

Project Inputs

Core Project Information

Name:	A1-B2_Refurbishment Project: 3
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2075
Location of Project:	Gardner, Westminster
Estimated Capital Cost:	\$100,000,000
Who is the Submitting Entity?	Private Other National Grid Michael Tyrrell (Michael.Tyrrell@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	NEP owns and operates double-circuit 69 kV lines (A1 and B2 lines) that begin at NEP's existing Vernon #13 switchyard in Vernon, Vermont and cross through the towns of Hinsdale and Winchester, NH before continuing through a number of towns in MA and terminating at NEP's Pratts Junction #225 Substation located in Sterling, MA. Within Massachusetts, a distance of approximately 54.26 miles go through the municipalities of Warwick, Royalton, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling in Massachusetts. The A1/B2 lines were originally constructed in 1909, and the original lattice structures remain along the majority of line. The lines were reconductored in the 1920s and were reinsulated in 2004. Structures and wires need to be replaced due to asset condition and aging infrastructure. Although the new A1/B2 Transmission Lines will operate at 69 kV when they are first placed into service, they are being designed and built to support operation at 115 kV at some point during their expected life.

Project Submission Comments:

Project Ecosystem Benefits

Factors Influencing Output

- ✓ Project filters stormwater using green infrastructure
- ✓ Project provides pollinator habitat
- ✓ Project provides recreation

Factors to Improve Output

- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	Yes

Improves water quality	No
Promotes decarbonization	Maybe
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	Maybe
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	Yes
Provides recreation	Yes
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	Yes
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Transmission Line
 Asset Type: Utility Infrastructure
 Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
 Construction Type: Major Repair/Retrofit
 Construction Year: 2025
 Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Less than 100,000 people

Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.

The infrastructure is located in an environmental justice community, and/or provides some services to vulnerable populations (services are not available elsewhere to same population)

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain most government services, while some services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

Loss of confidence in government agency

Report Comments

N/A

RMAT Climate Resilience Design Standards Tool Project Report

A1_B2_Refurbishment Project

Date Created: 3/21/2022 3:18:22 PM

Created By: Priyanka

[Download](#)

Project Summary

[Link to Project](#)

Estimated Construction Cost: \$100000000.00
 End of Life Year: 2075
 Project within mapped Environmental Justice population: Yes

Ecosystem Benefits	Scores
Project Score	Low
Exposure	Scores
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Transmission Line	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge Transmission Line					
Extreme Precipitation Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat Transmission Line	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is between 10% and 50%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Project site has a history of riverine flooding
- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is between 10% and 50%
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site

Scoring Rationale - Asset Risk Scoring

Asset - Transmission Line

Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Loss/inoperability of the asset would have regional impacts
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: Transmission Line

Infrastructure

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Tidal Benchmarks: No

Stillwater Elevation: No

Design Flood Elevation (DFE): No

Wave Heights: No

Duration of Flooding: No

Design Flood Velocity: No

Wave Forces: No

Scour or Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070

Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Total Precipitation Depth for 24-hour Design Storms: Yes

Peak Intensity for 24-hour Design Storms: Yes

Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes

Duration of Flooding for Design Storm: Yes

Flood Pathways: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Annual/Summer/Winter Average Temperature: Yes

Heat Index: Yes

Days Per Year With Max Temperature > 95°F: Yes

Days Per Year With Max Temperature > 90°F: Yes

Days Per Year With Max Temperature < 32°F: Yes

Number of Heat Waves Per Year: Yes

Average Heat Wave Duration (Days): Yes

Cooling Degree Days (Base = 65°F): No

Heating Degree Days (Base = 65°F): No

Growing Degree Days: No

Project Inputs

Core Project Information

Name:	A1_B2_Refurbishment Project
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2075
Location of Project:	Gardner
Estimated Capital Cost:	\$100,000,000
Who is the Submitting Entity?	Private Other National Grid Michael Tyrell (Michael.Tyrrell@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	NEP owns and operates double-circuit 69 kV lines (A1 and B2 lines) that begin at NEP's existing Vernon #13 switchyard in Vernon, Vermont and cross through the towns of Hinsdale and Winchester, NH before continuing through a number of towns in MA and terminating at NEP's Pratts Junction #225 Substation located in Sterling, MA. Within Massachusetts, a distance of approximately 54.26 miles go through the municipalities of Warwick, Royalton, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling in Massachusetts. The A1/B2 lines were originally constructed in 1909, and the original lattice structures remain along the majority of line. The lines were reconductored in the 1920s and were reinsulated in 2004. Structures and wires need to be replaced due to asset condition and aging infrastructure. Although the new A1/B2 Transmission Lines will operate at 69 kV when they are first placed into service, they are being designed and built to support operation at 115 kV at some point during their expected life.

Project Submission Comments:

Project Ecosystem Benefits

Factors Influencing Output

- ✓ Project filters stormwater using green infrastructure
- ✓ Project provides pollinator habitat
- ✓ Project provides recreation

Factors to Improve Output

- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	Yes

Improves water quality	No
Promotes decarbonization	Maybe
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	Maybe
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	Yes
Provides recreation	Yes
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	Yes
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Transmission Line
 Asset Type: Utility Infrastructure
 Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
 Construction Type: Major Repair/Retrofit
 Construction Year: 2025
 Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Less than 100,000 people

Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.

The infrastructure is located in an environmental justice community, and/or provides some services to vulnerable populations (services are not available elsewhere to same population)

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain most government services, while some services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

Loss of confidence in government agency

Report Comments

N/A

RMAT Climate Resilience Design Standards Tool Project Report

A1-B2_Refurbishment Project: 5

Date Created: 3/21/2022 4:01:40 PM

Created By: Priyanka

[Download](#)

Project Summary

[Link to Project](#)

Estimated Construction Cost: \$100000000.00

End of Life Year: 2075

Project within mapped Environmental Justice population: No

Ecosystem Benefits	Scores
Project Score	Low
Exposure	Scores
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Transmission Line	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge Transmission Line					
Extreme Precipitation Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat Transmission Line	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Project site has a history of riverine flooding
- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing trees are being removed as part of the proposed project
- Less than 10% of the existing project site has canopy cover
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site

Scoring Rationale - Asset Risk Scoring

Asset - Transmission Line

Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: Transmission Line

Infrastructure

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Tidal Benchmarks: No

Stillwater Elevation: No

Design Flood Elevation (DFE): No

Wave Heights: No

Duration of Flooding: No

Design Flood Velocity: No

Wave Forces: No

Scour or Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070

Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Total Precipitation Depth for 24-hour Design Storms: Yes

Peak Intensity for 24-hour Design Storms: Yes

Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes

Duration of Flooding for Design Storm: Yes

Flood Pathways: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
 Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Annual/Summer/Winter Average Temperature: Yes

Heat Index: Yes

Days Per Year With Max Temperature > 95°F: Yes

Days Per Year With Max Temperature > 90°F: Yes

Days Per Year With Max Temperature < 32°F: Yes

Number of Heat Waves Per Year: Yes

Average Heat Wave Duration (Days): Yes

Cooling Degree Days (Base = 65°F): No

Heating Degree Days (Base = 65°F): No

Growing Degree Days: No

Project Inputs

Core Project Information

Name:	A1-B2_Refurbishment Project: 5
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2075
Location of Project:	Royalston, Winchendon
Estimated Capital Cost:	\$100,000,000
Who is the Submitting Entity?	Private Other National Grid Michael Tyrell (Michael.Tyrrell@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	NEP owns and operates double-circuit 69 kV lines (A1 and B2 lines) that begin at NEP's existing Vernon #13 switchyard in Vernon, Vermont and cross through the towns of Hinsdale and Winchester, NH before continuing through a number of towns in MA and terminating at NEP's Pratts Junction #225 Substation located in Sterling, MA. Within Massachusetts, a distance of approximately 54.26 miles go through the municipalities of Warwick, Royalton, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling in Massachusetts. The A1/B2 lines were originally constructed in 1909, and the original lattice structures remain along the majority of line. The lines were reconductored in the 1920s and were reinsulated in 2004. Structures and wires need to be replaced due to asset condition and aging infrastructure. Although the new A1/B2 Transmission Lines will operate at 69 kV when they are first placed into service, they are being designed and built to support operation at 115 kV at some point during their expected life.

Project Submission Comments:

Project Ecosystem Benefits

Factors Influencing Output

- ✓ Project filters stormwater using green infrastructure
- ✓ Project provides pollinator habitat
- ✓ Project provides recreation

Factors to Improve Output

- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	Yes

Improves water quality	No
Promotes decarbonization	Maybe
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	Maybe
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	Yes
Provides recreation	Yes
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	Yes
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Transmission Line
 Asset Type: Utility Infrastructure
 Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
 Construction Type: Major Repair/Retrofit
 Construction Year: 2025
 Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Greater than 100,000 people

Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.

The infrastructure is located in an environmental justice community, and/or provides some services to vulnerable populations (services are not available elsewhere to same population)

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain most government services, while some services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

Loss of confidence in government agency

Report Comments

N/A

RMAT Climate Resilience Design Standards Tool Project Report

A1_B2_Refurbishment Project: 5

Date Created: 3/21/2022 3:38:17 PM

Created By: Priyanka

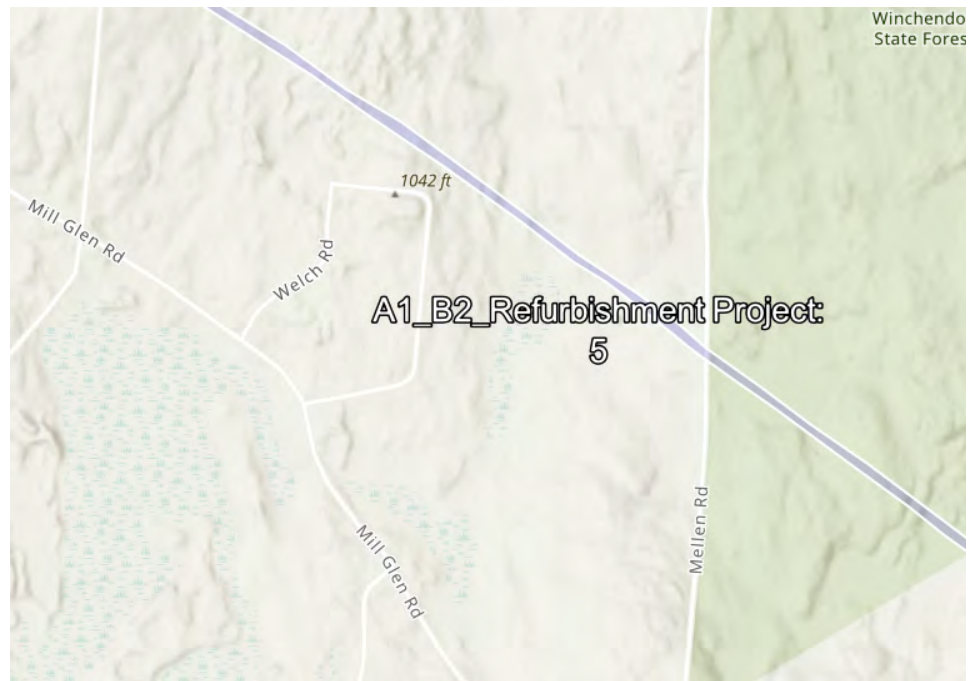
[Download](#)

Project Summary

[Link to Project](#)

Estimated Construction Cost: \$100000000.00
 End of Life Year: 2075
 Project within mapped Environmental Justice population: No

Ecosystem Benefits	Scores
Project Score	Low
Exposure	Scores
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Transmission Line	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge Transmission Line					
Extreme Precipitation Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat Transmission Line	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Project site has a history of riverine flooding
- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing trees are being removed as part of the proposed project
- Between 10% and 40% of the existing project site has canopy cover
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site

Scoring Rationale - Asset Risk Scoring

Asset - Transmission Line

Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: Transmission Line

Infrastructure

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Tidal Benchmarks: No

Stillwater Elevation: No

Design Flood Elevation (DFE): No

Wave Heights: No

Duration of Flooding: No

Design Flood Velocity: No

Wave Forces: No

Scour or Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070

Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Total Precipitation Depth for 24-hour Design Storms: Yes

Peak Intensity for 24-hour Design Storms: Yes

Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes

Duration of Flooding for Design Storm: Yes

Flood Pathways: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Annual/Summer/Winter Average Temperature: Yes

Heat Index: Yes

Days Per Year With Max Temperature > 95°F: Yes

Days Per Year With Max Temperature > 90°F: Yes

Days Per Year With Max Temperature < 32°F: Yes

Number of Heat Waves Per Year: Yes

Average Heat Wave Duration (Days): Yes

Cooling Degree Days (Base = 65°F): No

Heating Degree Days (Base = 65°F): No

Growing Degree Days: No

Project Inputs

Core Project Information

Name:	A1_B2_Refurbishment Project: 5 2075
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	
Location of Project:	Gardner, Winchendon
Estimated Capital Cost:	\$100,000,000
Who is the Submitting Entity?	Private Other National Grid Michael Tyrell (Michael.Tyrrell@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	NEP owns and operates double-circuit 69 kV lines (A1 and B2 lines) that begin at NEP's existing Vernon #13 switchyard in Vernon, Vermont and cross through the towns of Hinsdale and Winchester, NH before continuing through a number of towns in MA and terminating at NEP's Pratts Junction #225 Substation located in Sterling, MA. Within Massachusetts, a distance of approximately 54.26 miles go through the municipalities of Warwick, Royalton, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling in Massachusetts. The A1/B2 lines were originally constructed in 1909, and the original lattice structures remain along the majority of line. The lines were reconductored in the 1920s and were reinsulated in 2004. Structures and wires need to be replaced due to asset condition and aging infrastructure. Although the new A1/B2 Transmission Lines will operate at 69 kV when they are first placed into service, they are being designed and built to support operation at 115 kV at some point during their expected life.

Project Submission Comments:

Project Ecosystem Benefits

Factors Influencing Output

- ✓ Project filters stormwater using green infrastructure
- ✓ Project provides pollinator habitat
- ✓ Project provides recreation

Factors to Improve Output

- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	Yes

Improves water quality	No
Promotes decarbonization	Maybe
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	Maybe
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	Yes
Provides recreation	Yes
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	Yes
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Transmission Line
 Asset Type: Utility Infrastructure
 Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
 Construction Type: Major Repair/Retrofit
 Construction Year: 2025
 Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Greater than 100,000 people

Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.

The infrastructure is located in an environmental justice community, and/or provides some services to vulnerable populations (services are not available elsewhere to same population)

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain most government services, while some services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

Loss of confidence in government agency

Report Comments

N/A

RMAT Climate Resilience Design Standards Tool Project Report

A1-B2_ Refurbishment Project: 6

Date Created: 3/21/2022 4:27:51 PM

Created By: Priyanka

[Download](#)

Project Summary

[Link to Project](#)

Estimated Construction Cost: \$100000000.00

End of Life Year: 2075

Project within mapped Environmental Justice population: Yes

Ecosystem Benefits	Scores
Project Score	Low
Exposure	Scores
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Transmission Line	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge Transmission Line					
Extreme Precipitation Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat Transmission Line	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Project site has a history of riverine flooding
- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing trees are being removed as part of the proposed project
- Less than 10% of the existing project site has canopy cover
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site

Scoring Rationale - Asset Risk Scoring

Asset - Transmission Line

Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: Transmission Line

Infrastructure

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Tidal Benchmarks: No

Stillwater Elevation: No

Design Flood Elevation (DFE): No

Wave Heights: No

Duration of Flooding: No

Design Flood Velocity: No

Wave Forces: No

Scour or Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070

Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Total Precipitation Depth for 24-hour Design Storms: Yes

Peak Intensity for 24-hour Design Storms: Yes

Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes

Duration of Flooding for Design Storm: Yes

Flood Pathways: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Annual/Summer/Winter Average Temperature: Yes

Heat Index: Yes

Days Per Year With Max Temperature > 95°F: Yes

Days Per Year With Max Temperature > 90°F: Yes

Days Per Year With Max Temperature < 32°F: Yes

Number of Heat Waves Per Year: Yes

Average Heat Wave Duration (Days): Yes

Cooling Degree Days (Base = 65°F): No

Heating Degree Days (Base = 65°F): No

Growing Degree Days: No

Project Inputs

Core Project Information

Name:	A1-B2_Refurbishment Project: 6
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2075
Location of Project:	Athol
Estimated Capital Cost:	\$100,000,000
Who is the Submitting Entity?	Private Other National Grid Michael Tyrell (Michael.Tyrrell@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	NEP owns and operates double-circuit 69 kV lines (A1 and B2 lines) that begin at NEP's existing Vernon #13 switchyard in Vernon, Vermont and cross through the towns of Hinsdale and Winchester, NH before continuing through a number of towns in MA and terminating at NEP's Pratts Junction #225 Substation located in Sterling, MA. Within Massachusetts, a distance of approximately 54.26 miles go through the municipalities of Warwick, Royalton, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling in Massachusetts. The A1/B2 lines were originally constructed in 1909, and the original lattice structures remain along the majority of line. The lines were reconductored in the 1920s and were reinsulated in 2004. Structures and wires need to be replaced due to asset condition and aging infrastructure. Although the new A1/B2 Transmission Lines will operate at 69 kV when they are first placed into service, they are being designed and built to support operation at 115 kV at some point during their expected life.

Project Submission Comments:

Project Ecosystem Benefits

Factors Influencing Output

- ✓ Project filters stormwater using green infrastructure
- ✓ Project provides pollinator habitat
- ✓ Project provides recreation

Factors to Improve Output

- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	Yes

Improves water quality	No
Promotes decarbonization	Maybe
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	Maybe
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	Yes
Provides recreation	Yes
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	Yes
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Transmission Line
 Asset Type: Utility Infrastructure
 Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
 Construction Type: Major Repair/Retrofit
 Construction Year: 2025
 Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Greater than 100,000 people

Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.

The infrastructure is located in an environmental justice community, and/or provides some services to vulnerable populations (services are not available elsewhere to same population)

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain most government services, while some services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

Loss of confidence in government agency

Report Comments

N/A

RMAT Climate Resilience Design Standards Tool Project Report

A1B1_RefurbishmentProject: 8

Date Created: 3/23/2022 9:15:38 AM

Created By: Priyanka

[Download](#)

Project Summary

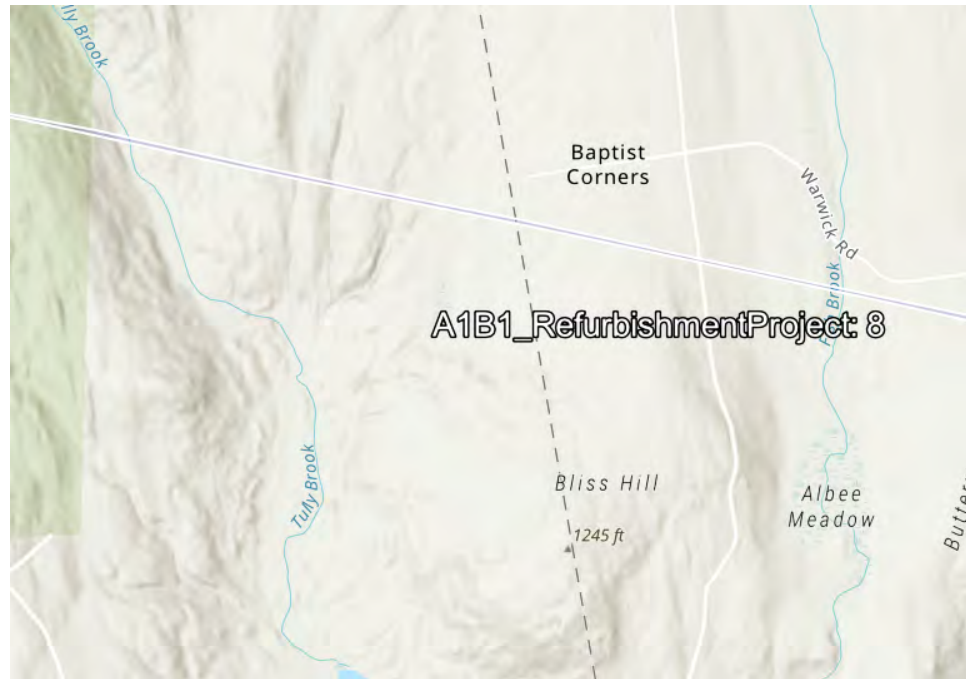
[Link to Project](#)

Estimated Construction Cost: \$100000000.00

End of Life Year: 2075

Project within mapped Environmental Justice population: No

Ecosystem Benefits	Scores
Project Score	Low
Exposure	Scores
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
115 kv Electric Transmission Line	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge 115 kv Electric Transmission Line					
Extreme Precipitation 115 kv Electric Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat 115 kv Electric Transmission Line	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Project site has a history of riverine flooding
- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing trees are being removed as part of the proposed project
- Between 10% and 40% of the existing project site has canopy cover
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site

Scoring Rationale - Asset Risk Scoring

Asset - 115 kv Electric Transmission Line

Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: 115 kv Electric Transmission Line

Infrastructure

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Tidal Benchmarks: No

Stillwater Elevation: No

Design Flood Elevation (DFE): No

Wave Heights: No

Duration of Flooding: No

Design Flood Velocity: No

Wave Forces: No

Scour or Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070

Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Total Precipitation Depth for 24-hour Design Storms: Yes

Peak Intensity for 24-hour Design Storms: Yes

Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes

Duration of Flooding for Design Storm: Yes

Flood Pathways: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 ([Link](#))

Annual/Summer/Winter Average Temperature: Yes

Heat Index: Yes

Days Per Year With Max Temperature > 95°F: Yes

Days Per Year With Max Temperature > 90°F: Yes

Days Per Year With Max Temperature < 32°F: Yes

Number of Heat Waves Per Year: Yes

Average Heat Wave Duration (Days): Yes

Cooling Degree Days (Base = 65°F): No

Heating Degree Days (Base = 65°F): No

Growing Degree Days: No

Project Inputs

Core Project Information

Name:	A1B1_RefurbishmentProject: 8 2075
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	
Location of Project:	Royalston, Warwick
Estimated Capital Cost:	\$100,000,000
Who is the Submitting Entity?	Private Other National Grid Michael Tyrell (Michael.Tyrrell@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	NEP owns and operates double-circuit 69 kV lines (A1 and B2 lines) that begin at NEP's existing Vernon #13 switchyard in Vernon, Vermont and cross through the towns of Hinsdale and Winchester, NH before continuing through a number of towns in MA and terminating at NEP's Pratts Junction #225 Substation located in Sterling, MA. Within Massachusetts, a distance of approximately 54.26 miles go through the municipalities of Warwick, Royalton, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling in Massachusetts. The A1/B2 lines were originally constructed in 1909, and the original lattice structures remain along the majority of line. The lines were reconductored in the 1920s and were reinsulated in 2004. Structures and wires need to be replaced due to asset condition and aging infrastructure. Although the new A1/B2 Transmission Lines will operate at 69 kV when they are first placed into service, they are being designed and built to support operation at 115 kV at some point during their expected life.

Project Submission Comments:

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Factors Influencing Output

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No

Project Benefits

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Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	Yes

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Promotes decarbonization	Maybe
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Improves air quality	No
Prevents pollution	Maybe
Remediates existing sources of pollution	No
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Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
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Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	Yes
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: 115 kv Electric Transmission Line
 Asset Type: Utility Infrastructure
 Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
 Construction Type: Major Repair/Retrofit
 Construction Year: 2025
 Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

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Greater than or equal to \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

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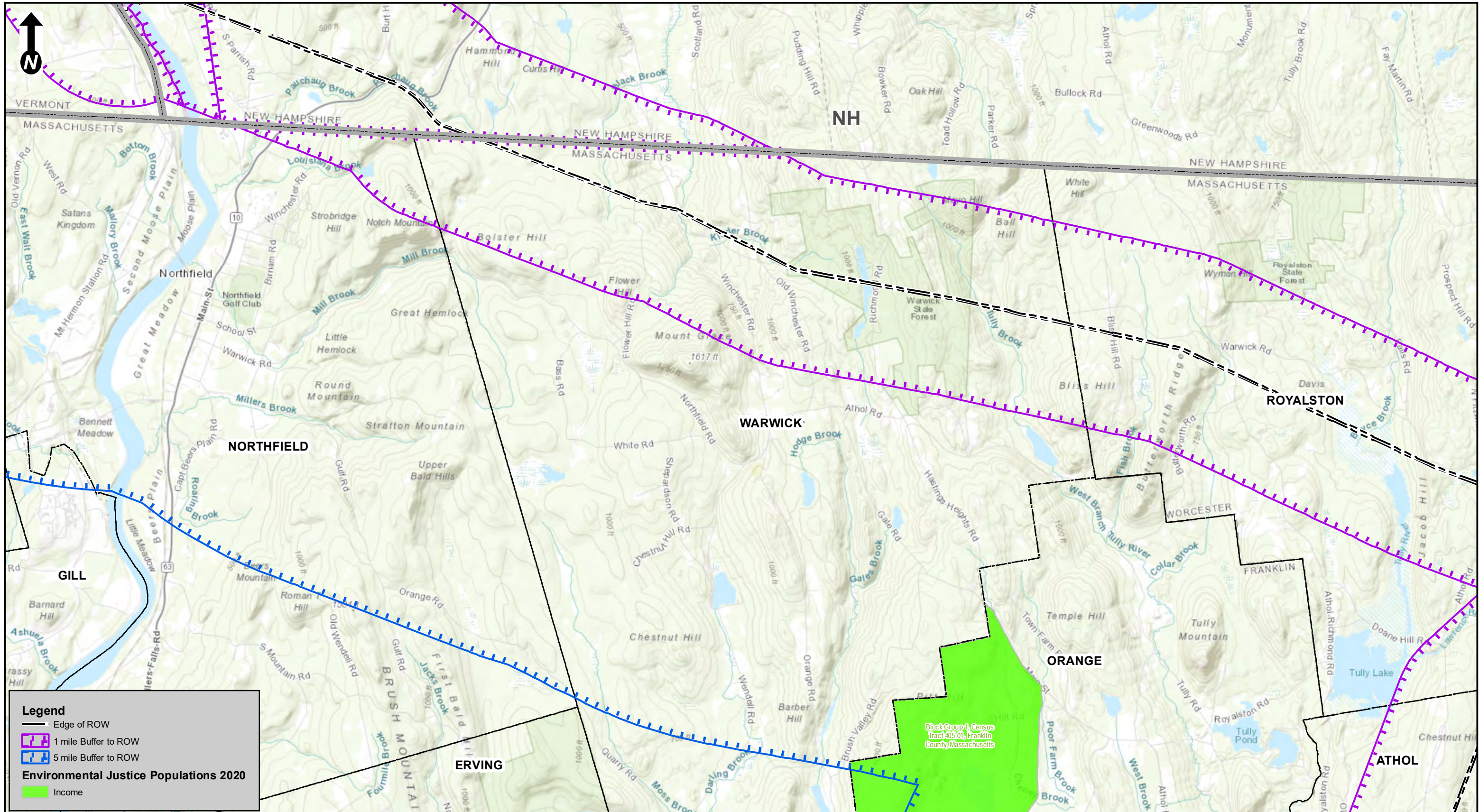
Loss of infrastructure may reduce the ability to maintain most government services, while some services will still exist

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Loss of confidence in government agency

Report Comments

N/A



Legend

- Edge of ROW
- 1 mile Buffer to ROW
- 5 mile Buffer to ROW

Environmental Justice Populations 2020

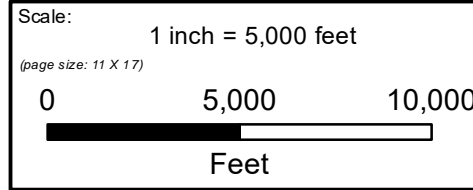
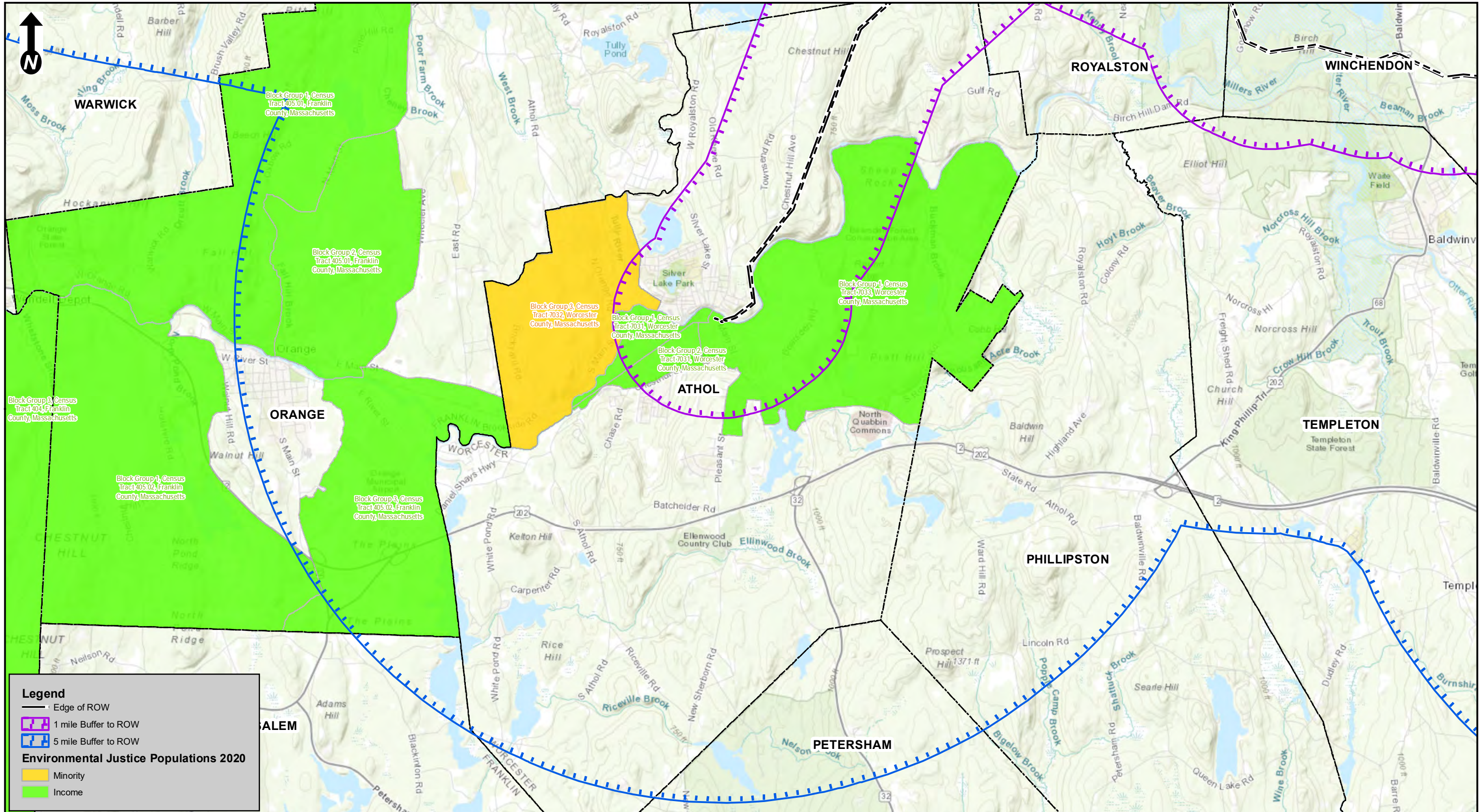
- Income

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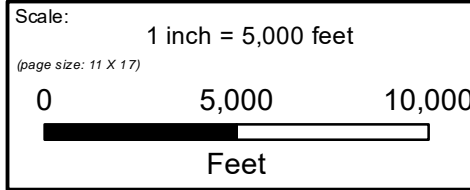
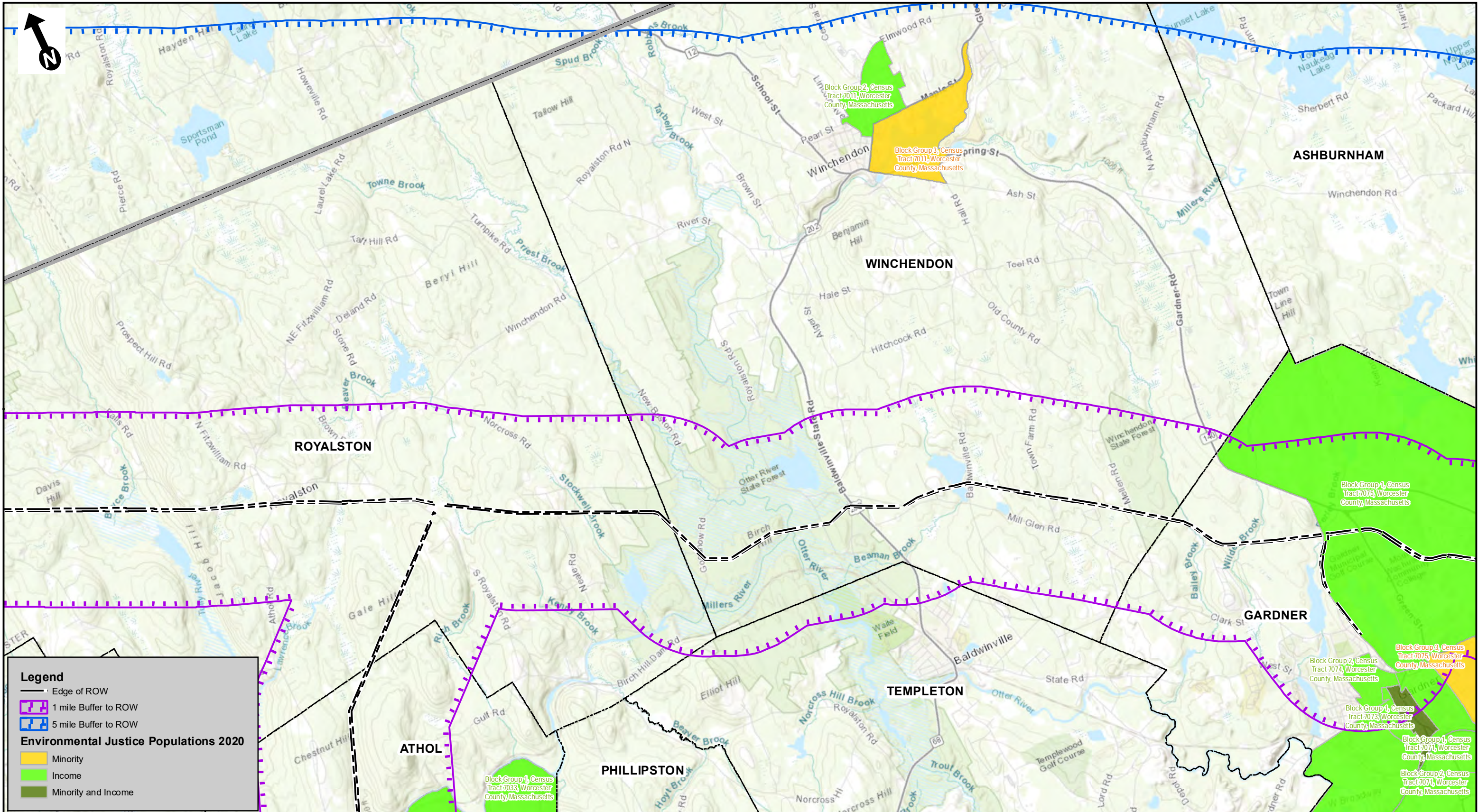
A1/B2 ACR PROJECT
Figure 4: Environmental Justice Populations Site Location Map
 Warwick, Royalston & Athol MA
 Page 1 of 6

Source: 2013
 National Geographic
 Society, i-cubed



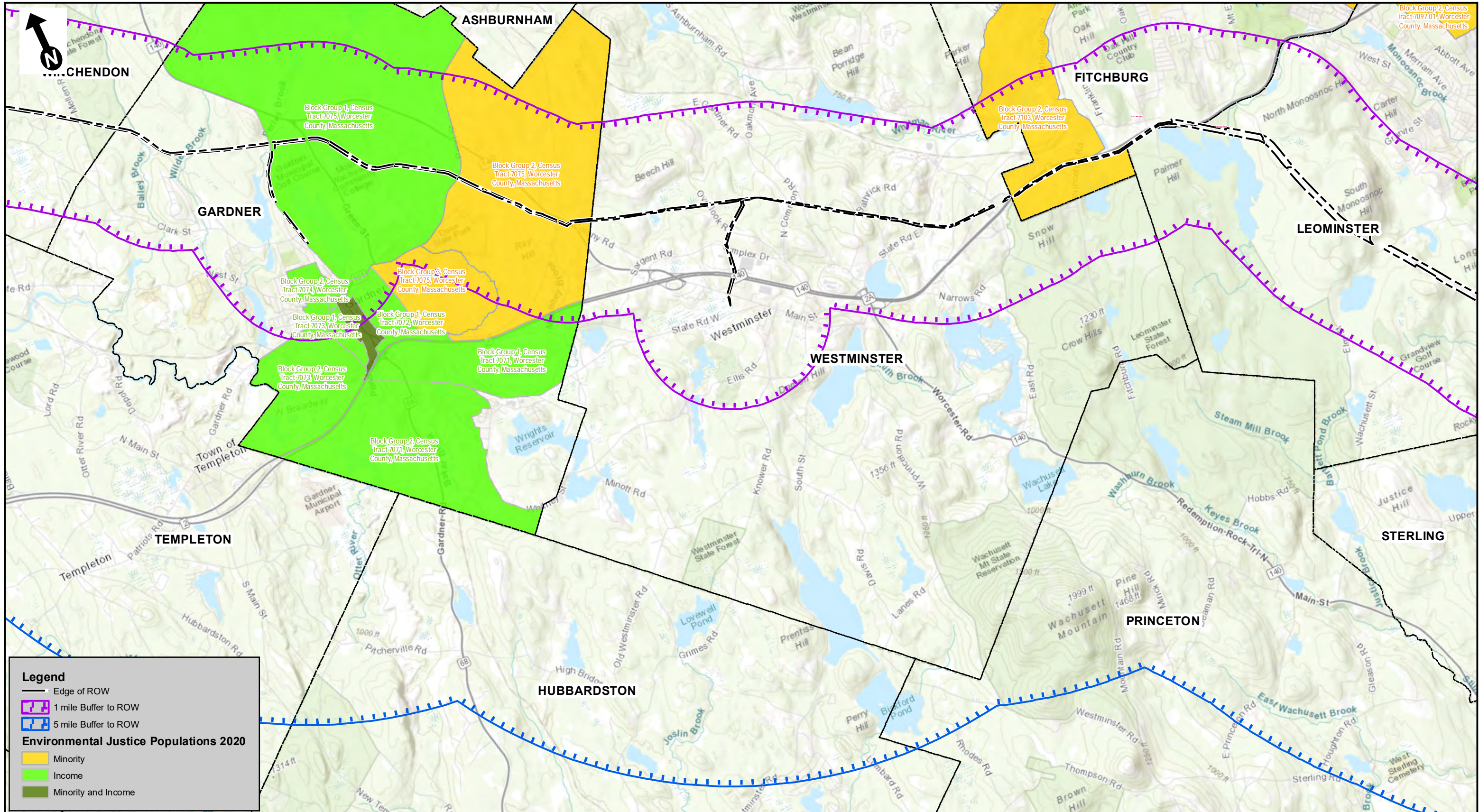
A1/B2 ACR PROJECT
Figure 4: Environmental Justice Populations Site Location Map
 Athol, Royalston & Winchendon, MA
 Page 2 of 6

Source: 2013
 National Geographic
 Society, i-cubed



A1/B2 ACR PROJECT
Figure 4: Environmental Justice Populations Site Location Map
Royalston, Athol, Winchendon & Gardner, MA
 Page 3 of 6

Source: 2013
 National Geographic
 Society, i-cubed



Legend

- Edge of ROW
- 1 mile Buffer to ROW
- 5 mile Buffer to ROW

Environmental Justice Populations 2020

- Minority
- Income
- Minority and Income

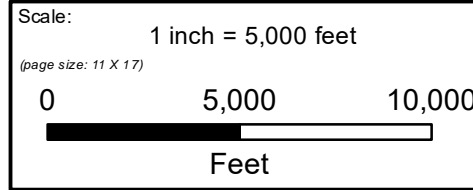
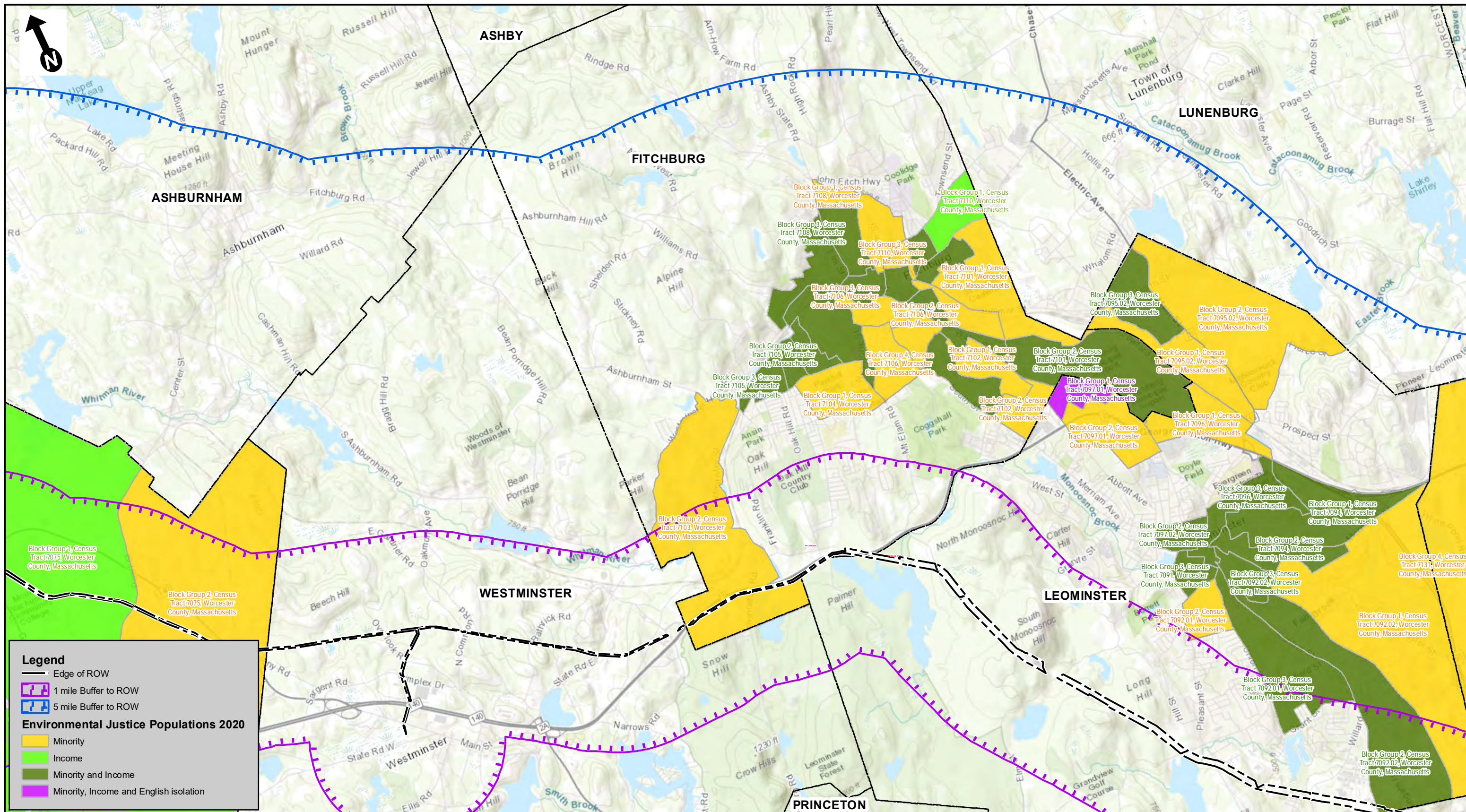
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 (page size: 11 X 17)

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A1/B2 ACR PROJECT
Figure 4: Environmental Justice Populations Site Location Map
 Winchendon, Gardner, Westminister, Fitchburg & Leominster, MA
 Page 4 of 6

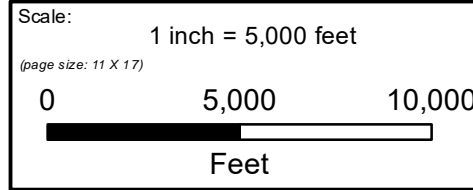
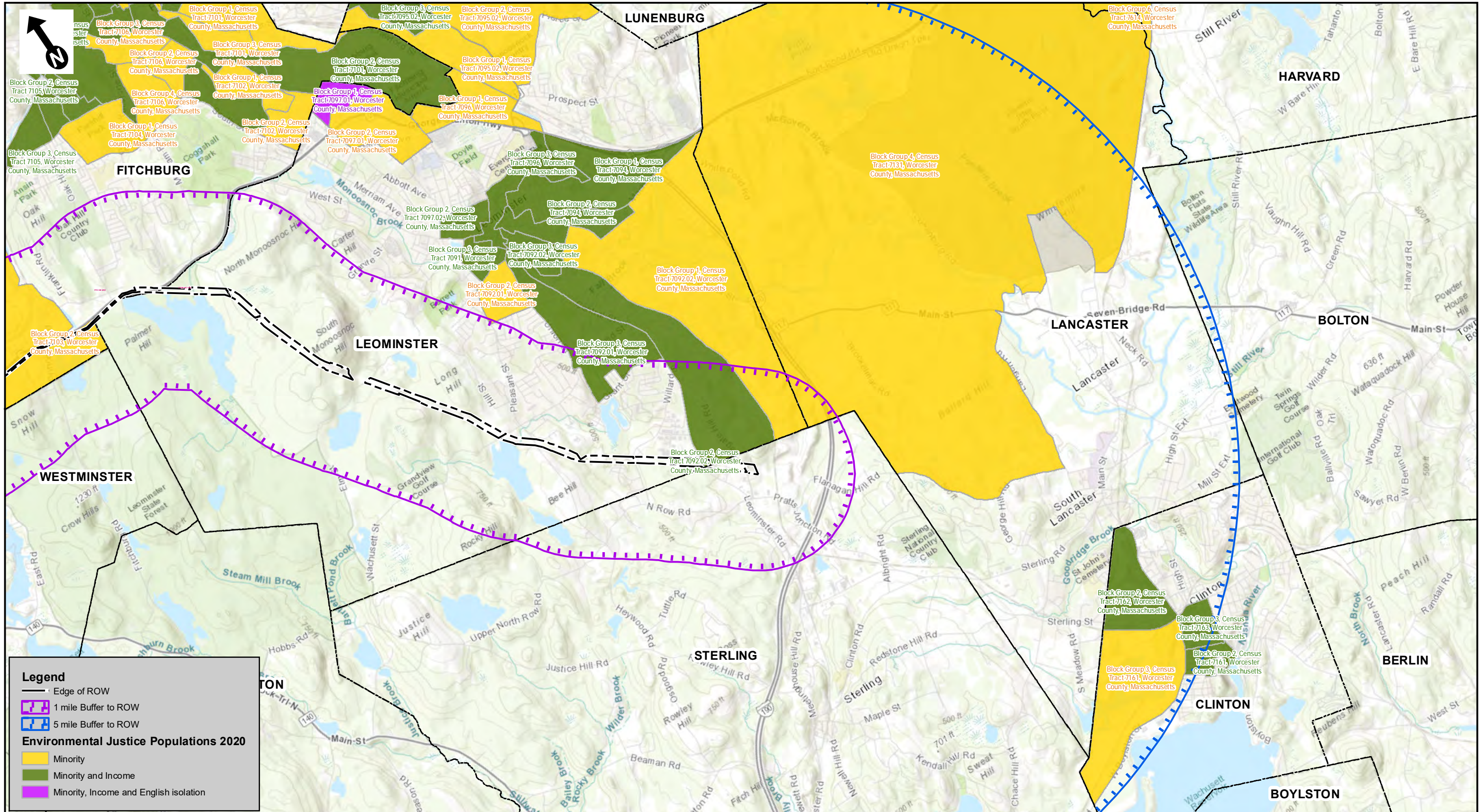
Source: 2013
 National Geographic
 Society, i-cubed

nationalgrid
BSC GROUP



A1/B2 ACR PROJECT
Figure 4: Environmental Justice Populations Site Location Map
Westminister, Fitchburg & Leominster, MA
Page 5 of 6

Source: 2013
National Geographic
Society, i-cubed



A1/B2 ACR PROJECT
Figure 4: Environmental Justice Populations Site Location Map
Leominster & Sterling, MA
Page 6 of 6

Source: 2013
National Geographic
Society, i-cubed

Environmental Justice Screening Form

Project Name	A1B2 Transmission Line Asset Condition Refurbishment Project: "A1B2 Transmission Line ACR Project"
Anticipated Date of MEPA Filing	July 29, 2022
Proponent Name	New England Power Company (NEP)
Contact Information (e.g., consultant)	Theresa Portante, BSC Group, Inc. PO Box 60658 Worcester, MA 01606 617-896-4509
Public website for project or other physical location where project materials can be obtained (if available)	www.newenglandA1B2.com
Municipality and Zip Code for Project (if known)	Warwick (01378), Royalston (01368), Winchendon (01475), Gardner (01440), Westminster (01473), Fitchburg (01420), Leominster (01453), Athol (01331), and Sterling (01564)
Project Type* (list all that apply)	Refurbish Existing Overhead Electric Transmission Line
Is the project site within a mapped 100-year FEMA flood plain? Y/N/yes/unknown	Yes, in short segments of Right-of-Way scattered along the project length
Estimated GHG emissions of conditioned spaces if known (click here for GHG Estimation tool)	Not applicable – No buildings are proposed as part of this project.

Project Description

<p>1. Provide a brief project description, including overall size of the project site and square footage of proposed buildings and structures if known.</p> <p>New England Power Company owns and operates two 69 kilovolt (kV) overhead electric transmission lines ("wires") that are supported primarily on lattice towers ("structures"), the A1 and B2 Lines ("Line"), which are located within an existing Right-of-Way corridor. The Right-of-Way begins at NEP's Vernon #13 switchyard in Vernon, Vermont, crosses through a portion of New Hampshire, enters Massachusetts in Warwick, and ends at the Pratts Junction #225 Substation located in Sterling. These Lines were originally constructed in 1909 to bring electricity from the hydroelectric generating plant in Vernon, Vermont to Worcester County. Within Massachusetts, the Lines traverse the following towns totaling approximately 40 miles: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster and Sterling. This section is considered the "mainline."</p> <p>In addition to the mainline, there are also three (3) existing tap lines that are part of the project that stem off the mainline and deliver electricity to three (3) existing substations. One of the tap lines, referred to as the Athol Tap, begins within the mainline Right-of-Way in Royalston and extends within its own Right-of-Way to the Chestnut Hill Substation in Ayer and is 5.95 miles in length. The second is the Crystal Lake Tap, which is located within its own Right-of-Way, entirely within Gardner, transmitting electricity to the Crystal Lake Substation and is 1.17 miles in length. Lastly is the East Westminster Tap, which transmits electricity</p>

to the East Westminster Substation, and is only 0.01 miles in length since this Substation is located within the A1 and B2 mainline Right-of-Way. Unlike the mainline, the Athol and Crystal Lake Tap lines are located on wood pole structures. Overall, the project encompasses 54.26 miles of Right-of-Way in Massachusetts.

Due to the aging structures and poor structure condition of the A1 and B2 Lines, NEP is proposing to rebuild the Lines on new structures. The Tap Lines noted above will also be rebuilt. The purpose is to ensure reliable and continuous electricity is provided to its customers serviced by these Lines within Worcester County. Although the new Lines will continue to transmit electricity at 69 kilovolts, NEP has planned and designed the Project to support transmission of a higher voltage since it is anticipated within the lifetime of the structures, NEP will need to be able to operate the Lines at 115 kilovolts to support higher volumes of currently active and forecasted renewable energy resources in this region. NEP will also be installing Optical Primary Ground Wire, which serves a dual purpose by providing the necessary electrical grounding in the event of lightning strikes with the additional feature of enabling telecommunication along the transmission lines and between substations. This telecommunication is critical to identifying problems, such as damage to the infrastructure from storm events or storm related outages, enabling NEP to respond quickly to any problems with the transmission of electricity along these Lines. In addition, due to poor access along most of the Right-of-Way corridors, access improvements or re-establishment and construction of new access will be undertaken to conduct the proposed work and support future maintenance of the Lines.

2. List anticipated MEPA review thresholds (301 CMR 11.03) (if known)

ENF Review:

- 301 CMR 11.03(3)(b)(1)(b)-Wetlands, Waterways and Tidelands: alteration of 500 or more linear feet of bank along a fish run or inland bank.
- 301 CMR 11.03(3)(b)(1)(f)- Wetlands, Waterways and Tidelands: alteration of ½ or more acres of any other wetlands.

ENF and Mandatory EIR:

- 301 CMR 11.03(1)(a) - Land: Direct alteration of 50 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar.
- 301 CMR 11.03(3)(a)(1)(a)- Wetlands, Waterways and Tidelands: alteration of one or more acres of bordering vegetated wetlands (BVW).
- 301 CMR 11.03(3)(a)(1)(b)- Wetlands, Waterways and Tidelands: alteration of ten or more acres of any other wetlands.
- 301 CMR 11.06(7)(b) - Environmental Justice: The Secretary shall require an EIR for any Project that is located within a Designated Geographic Area around an Environmental Justice Population.

3. List all anticipated state, local and federal permits needed for the project (if known)

Agency	Permit, Review, or Approval
Federal	
U.S. Army Corps of Engineers (USACE)	Section 404 PCN Permit and consultations under Section 106 of National Historic Preservation Act and Section 7 of the Endangered Species Act
United States Environmental Protection Agency (EPA)	National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges and Construction Dewatering Activities/Stormwater Pollution Prevention Plan (SWPPP)
State	
Executive Office of Energy and Environmental Affairs (EEA)	MEPA Review/Certificate of the Secretary
Massachusetts Department of Environmental Protection (MassDEP)	Section 401 Individual Water Quality Certificate; WQC Variance
Massachusetts Natural Heritage and Endangered Species Program (NHESP)	Massachusetts Endangered Species Act – Determination of Take or No Take; Conservation Permit (if needed)
Massachusetts Historical Commission (MHC)	Consultation under M.G.L. c. 9 in accordance with 950 CMR 70-71
Energy Facilities Siting Board (EFSB)	Petition approval
Department of Conservation and Recreation (DCR)	Construction Access Permit
Massachusetts Department of Transportation (MassDOT)	Permit to Access State Highway/Non-Municipal Utility Permits for crossing over of state roads with utility lines
Local	
Conservation Commissions in Athol, Fitchburg, Gardner, Leominster, Royalston, Sterling, Warwick, Westminster, and Winchendon	Order of Conditions per the Massachusetts Wetlands Protection Act (MA WPA)

4. Identify EJ populations and characteristics (Minority, Income, English Isolation) within 5 miles of project site (can attach map from [EJ Maps Viewer](#) in lieu of narrative)

See Attachment A

5. Identify any municipality or census tract meeting the definition of “vulnerable health EJ criteria” in the [DPH EJ Tool](#) located in whole or in part within a 1 mile radius of the project site

See Attachment B

6. Identify potential short-term and long-term environmental and public health impacts that may affect EJ Populations and any anticipated mitigation

Out of 18 EJ Populations within the 1 -mile radius of the Right-of-Ways, only six (6) of the Populations overlap with the Right-of-Ways or are within proximity to the Right-of-Ways. These Populations are in the municipalities of Athol, Gardner, Fitchburg, and Leominster. The Right-of-Ways pass through or are adjacent to two (2) populations in Athol, two (2) populations in Gardner, one (1) in Fitchburg, and one (1) in Leominster. Out of the 54.26 miles of Right-of-Ways, only 4.95 Right-of-Way miles are within an EJ Census Tract.

Athol	<ul style="list-style-type: none"> • Within 100 ft of the Block Group 1, Census Tract 7031. • The Chestnut Hill Substation is located within the Block Group 1, Census Tract 7033. • Block Group 1, Census Tract 7031 is located approximately 227 ft from the ROW.
Gardner	Block Group 1, Census Tract 7075, and Block Group 2, Census Tract 7075
Leominster	Block Group 2, Census Tract 7092.02
Fitchburg	Block Group 2, Census Tract 7103

Potential environmental and public health impacts of the Project and anticipated mitigation include the following:

Air Quality

Construction-period activities, such as grading, roadbuilding, vehicle travel, and other earth-disturbing work may result in a temporary increase in airborne dust. Impacts to air quality will be minimized by managing the control of dust movement or blowing into the air with practices such as spreading wood mulch or straw and using water trucks to spray dried soil to keep it moist. The potential for dust generation is only anticipated during the construction period. Post construction, soil will be stabilized and re-vegetated. In addition, diesel-powered equipment is required to use ultra-low sulfur diesel fuel. Any diesel-powered non-road construction equipment rated 50-horsepower or more that will be used on the Project for 30 days or more will be required to install emission control devices. The impacts from these emissions will be minimal and are not anticipated to cause impacts to public health.

Water Quality

The project will incorporate protective and preventative measures to minimize and avoid impacts to water quality. The Right-of-Ways cross many wetland areas, streams and rivers. To protect water quality and these sensitive areas, temporary roads will be constructed using timber mats. Timber mats are comprised of wooden beams, bolted together, and are typically 4 ft wide by 16 ft long. They are laid temporarily on top of the ground and vegetation. These mats allow heavy machines and vehicles to cross sensitive areas without damaging the soil or roots of vegetation and are also placed in a manner that do not affect the flow of water in streams. These mats will be removed when construction is completed, and the wetlands will be restored. In addition, Best Management Practices, such as the use of straw wattles, silt fencing, stormwater management features, and other control measures will be used to prevent soil and other material from being transported into wetlands and streams. Using these Best Management Practices, any impacts to water quality will be negligible and temporary and are not anticipated to cause impacts to public health.

Land Protection and Open Space

There is one (1) EJ Population with Municipal Open Space (Gardner Municipal Golf Course) within the Project Right-of-Way, specifically, Block Group 1, Census Tract 7075 in Gardner. Access to the golf course will not be impacted by the Project since the activities will be limited to within the existing Right-of-Way.

The A1 and B2 Line passes through several State Forests owned and maintained by the Massachusetts Department of Conservation and Recreation (DCR). There is one (1) EJ Population within the Project Right-of-Way, Block Group 2, Census Tract 7103, located within a DCR Property (Leominster State Forest). This property does not have access roads, trails, or parking for public access. Additionally, Project activities will be limited to the existing Right-of-Way. Access to Protected Land and Open Space within EJ Populations will not be impacted.

Noise

The EJ communities that are most likely to have temporary noise impacts are the communities that are directly within or are located near the Right-of-Way. The EJ Populations that have relatively dense development are Block Group 1, Census Tract 7075 in Gardner and Block Group 1, Census Tract 7031 in Athol. The EJ Population in Athol is approximately 100 feet from the Athol Tap Line, whereas the Right-of-Way goes through the EJ Population in Gardner. Noise impacts associated with construction-period activities are temporary in nature and expected to be minimal. Where construction will occur adjacent to residences, NEP will notify landowners prior to the commencement of work. Noise-generating activities will be conducted in accordance with any local and state requirements and are not anticipated to cause impacts to public health.

Traffic

Impacts to traffic during the construction of the project will be minor and intermittent. The work areas will be accessed primarily from NEP-owned access routes or minor town roadways. Within Block Group 2, Census Tract 7103 in Fitchburg, temporary access off Route 2 will be required. NEP will obtain the necessary permits from MassDOT for access. Once on-site, vehicle traffic will be limited to within or in proximity to the ROW. Since the Right-of-Way is an un-manned facility, there will be no permanent impacts to traffic patterns or use of existing roadways and no impacts to public health are anticipated from traffic.

7. Identify project benefits, including “Environmental Benefits” as defined in 301 CMR 11.02, that may improve environmental conditions or public health of the EJ population

Potential “Environmental Benefits” include the following:

- Increased resiliency of the overall transmission line. By installing improved foundations and more robust structures, this infrastructure will be better suited to withstand strong winds and storm events.
- The new overhead line will be larger which will allow more electricity to flow during times of

high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change.

- The installation of Optical Primary Ground Wire will allow better communication between substations, resulting in improved response time during storm-related emergencies and outages, which will increase public safety.

Other benefits of this project that are not expressly included under the definition of “Environmental Benefits” consist of the following:

- Reduce overall disturbance to adjacent landowners, wetland resource areas, and rare species habitat over time by planning for the future and reducing the likelihood of multiple repeat projects, thereby reducing environmental impacts, and reducing costs to New England Power Company’s customers.
- The replacement of the Lines will have the added benefit of allowing more renewable energy resources to connect into the system. Addressing the climate change crisis requires a major expansion of renewable energy and the infrastructure necessary to support and deliver that energy. NEP is actively taking steps to ensure that its system is ready to meet this critical challenge. Replacing infrastructure like the A1/B2 Lines helps to accomplish this goal. The replacement lines will have higher kilovolt ratings that will support higher volumes of currently active and forecasted renewable energy resources in this region. This longer-term view is supported by the recently shared initial results of the ISO-NE 2050 study, where an upgrade to 115 kilovolt would be necessary based on the current study assumptions and long-term forecasts for the Commonwealth.

8. Describe how the community can request a meeting to discuss the project, and how the community can request oral language interpretation services at the meeting. Specify how to request other accommodations, including meetings after business hours and at locations near public transportation.

Communities and members of the public can access information related to the project in the following ways:

- A public website, hosted at the following web address: www.newenglandA1B2.com
- A virtual public meeting hosted by NEP
 - Recipients of this screening form will receive information related to this meeting via email, translation will be provided in Spanish.
 - Notification of this virtual meeting will be posted in the local newspapers of each municipality prior to the meeting date, translation will be provided.
- Hard copies of project materials will be made available at municipal libraries
- If you have additional questions, please contact 844-500-3536 or email us at info@newenglandA1B2.com

Recipients of this form include organizations on the EJ Reference List provided by Massachusetts Executive Office of Energy and Environmental Affairs per the Public Involvement Protocol. In addition, notice of the virtual public meeting details will be sent to Town Administrators and Landowners and/or Tenants of properties within an EJ Community that is within the A1 and B2 mainline and Tap Line Right-of-Ways.

**Attachment A: A1/B2 ACR Project
Massachusetts Department of Public Health (DPH) EJ Communities (5- Mile)**

Municipality	Census Tract	Category	Block Group	Minority Population	Median Income	Language Isolation
Athol	Block Group 1, Census Tract 7033, Worcester County, Massachusetts	Income	1	3.50%	\$42292: this is 49.3 % of the MA median.	1.20%
Athol	Block Group 2, Census Tract 7031, Worcester County, Massachusetts	Income	2	5.00%	\$43938: this is 51 % of the MA median.	2.00%
Athol	Block Group 1, Census Tract 7031, Worcester County, Massachusetts	Income	1	8.00%	\$35556: this is 41 % of the MA median.	2.00%
Athol	Block Group 3, Census Tract 7032, Worcester County, Massachusetts	Minority	3	33.00%	0	0.00%
Clinton	Block Group 3, Census Tract 7163, Worcester County, Massachusetts	Minority and Income	3	51.00%	\$46534: this is 54 % of the MA median.	9.00%
Clinton	Block Group 2, Census Tract 7191, Worcester County, Massachusetts	Minority and Income	2	38.00%	\$55536: this is 65 % of the MA median.	0.00%
Clinton	Block Group 3, Census Tract 7161, Worcester County, Massachusetts	Minority	3	36.60%	\$0: this is 0.0 % of the MA median.	0.00%
Clinton	Block Group 2, Census Tract 7162, Worcester County, Massachusetts	Minority and income	2	25.5 %	\$42900: this is 50.0 % of the MA median.	7.8 %
Fitchburg	Block Group 2, Census Tract 7103, Worcester County, Massachusetts	Minority	2	27.00%	\$62353: this is 73 % of the MA median.	2.00%
Fitchburg	Block Group 3, Census Tract 7105, Worcester County, Massachusetts	Minority and Income	3	35.00%	\$50163: this is 58 % of the MA median.	4.00%
Fitchburg	Block Group 2, Census Tract 7105, Worcester County, Massachusetts	Minority and Income	2	50%	\$ 27031: this is 31.5 % of the MA median	4.30%
Fitchburg	Block Group 1, Census Tract 7105, Worcester County, Massachusetts	Minority and Income	1	51.9 %	\$54931: this is 64.0 % of the MA median.	7.1 %
Fitchburg	Block Group 5, Census Tract 7106, Worcester County, Massachusetts	Minority and Income	5	53.5 %	\$44175: this is 51.5 % of the MA median.	0.00%
Fitchburg	Block Group 3, Census Tract 7108, Worcester County, Massachusetts	Minority and Income	3	47.1 %	\$28750: this is 33.5 % of the MA median.	3.9 %
Fitchburg	Block Group 2, Census Tract 7108, Worcester County, Massachusetts	Minority and Income	2	56.9 %	\$37188: this is 43.3 % of the MA median.	0.00%
Fitchburg	Block Group 4, Census Tract 7101, Worcester County, Massachusetts	Minority and Income	4	53.00%	\$48227: this is 56.2 % of the MA median.	9.70%
Fitchburg	Block Group 1, Census Tract 7104, Worcester County, Massachusetts	Minority	1	51.7 %	\$56932: this is 66.3 % of the MA median	4.4 %
Fitchburg	Block Group 4, Census Tract 7106, Worcester County, Massachusetts	Minority	4	58.7 %	\$86168: this is 100.4 % of the MA median.	2.00%
Fitchburg	Block Group 3, Census Tract 7106, Worcester County, Massachusetts	Minority	3	56.8 %	\$0: this is 0.00 % of the MA median.	16.30%

**Attachment A: A1/B2 ACR Project
Massachusetts Department of Public Health (DPH) EJ Communities (5- Mile)**

Municipality	Census Tract	Category	Block Group	Minority Population	Median Income	Language Isolation
Fitchburg	Block Group 2, Census Tract 7107, Worcester County, Massachusetts	Minority and Income	2	41.0 %	\$18958: this is 22.1 % of the MA median	11.6 %
Fitchburg	Block Group 1, Census Tract 7107, Worcester County, Massachusetts	Minority and Income	1	61.3 %	\$12418: this is 14.5 % of the MA median	17.1 %
Fitchburg	Block Group 1, Census Tract 7108, Worcester County, Massachusetts	Minority	1	40.3 %	\$60313: this is 70.3 % of the MA median.	15.3 %
Fitchburg	Block Group 2, Census Tract 7106, Worcester County, Massachusetts	Minority	2	57.60%	\$80526: this is 93.8 % of the MA median.	11.10%
Fitchburg	Block Group 3, Census Tract 7110, Worcester County, Massachusetts	Minority	3	54.2 %	\$0: this is 0.0 % of the MA median.	3.8 %
Fitchburg	Block Group 2, Census Tract 7110, Worcester County, Massachusetts	Minority and Income	2	35.1 %	\$49517: this is 57.7 % of the MA median.	3.8 %
Fitchburg	Block Group 1, Census Tract 7110, Worcester County, Massachusetts	Income	1	14.8 %	\$51406: this is 59.9 % of the MA median.	0.00%
Fitchburg	Block Group 1, Census Tract 7101, Worcester County, Massachusetts	Minority	1	46.8 %	\$75714: this is 88.2 % of the MA median.	8.20%
Fitchburg	Block Group 3, Census Tract 7101, Worcester County, Massachusetts	Minority	3	42.4 %	\$63433: this is 73.9 % of the MA median.	1.5 %
Fitchburg	Block Group 1, Census Tract 7106, Worcester County, Massachusetts	Minority and Income	1	52.3 %	\$39045: this is 45.5 % of the MA median	2.8 %
Fitchburg	Block Group 4, Census Tract 7102, Worcester County, Massachusetts	Minority and Income	4	35	\$55160: this is 64 % of the MA median.	3
Fitchburg	Block Group 2, Census Tract 7101, Worcester County, Massachusetts	Minority and Income	2	71.7 %	\$41800: this is 48.7 % of the MA median	0.00%
Fitchburg	Block Group 1, Census Tract 7102, Worcester County, Massachusetts	Minority	1	30.8 %	\$90078: this is 104.9 % of the MA median.	12.60%
Fitchburg	Block Group 2, Census Tract 7102, Worcester County, Massachusetts	Minority	2	25.70%	\$68,818: this is 80.2 % of the MA median.	3.10%
Gardner	Block Group 1, Census Tract 7075, Worcester County, Massachusetts	Income	1	14	\$56023: this is 65 % of the MA median.	5%
Gardner	Block Group 2, Census Tract 7075, Worcester County, Massachusetts	Minority	2	33	\$63401: this is 74 % of the MA median.	2%
Gardner	Block Group 3, Census Tract 7075, Worcester County, Massachusetts	Minority	3	34	\$80221: this is 93 % of the MA median.	0%
Gardner	Block Group 1, Census Tract 7072, Worcester County, Massachusetts	Income	1	18	\$32746: this is 38 % of the MA median.	5%
Gardner	Block Group 1, Census Tract 7071, Worcester County, Massachusetts	Income	1	1	\$41397: this is 48 % of the MA median.	1%
Gardner	Block Group 3, Census Tract 7073, Worcester County, Massachusetts	Minority and Income	3	40	\$40486: this is 47 % of the MA median.	0%

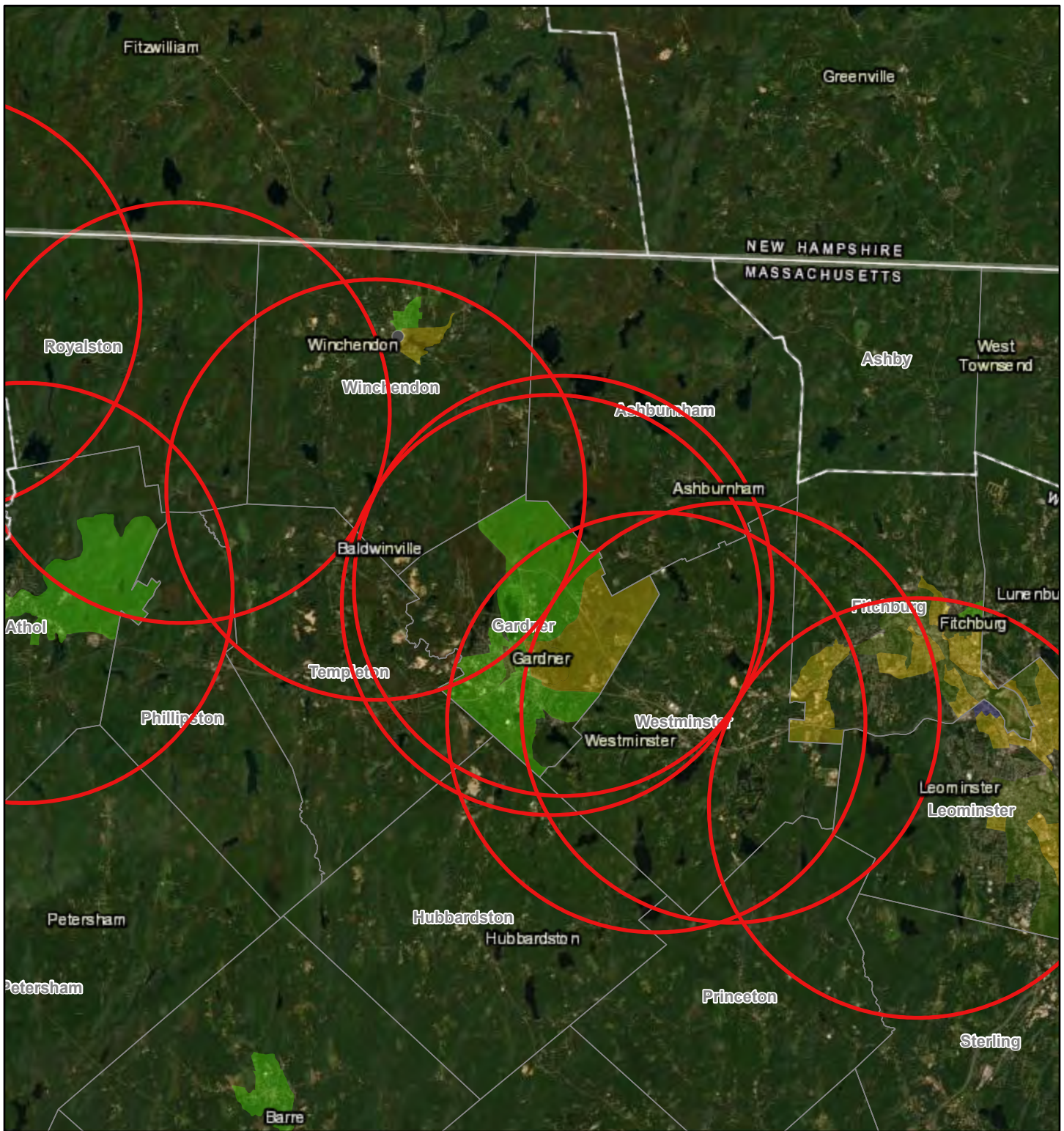
**Attachment A: A1/B2 ACR Project
Massachusetts Department of Public Health (DPH) EJ Communities (5- Mile)**

Municipality	Census Tract	Category	Block Group	Minority Population	Median Income	Language Isolation
Gardner	Block Group 2, Census Tract 7074, Worcester County, Massachusetts	Income	2	18	\$51635: this is 60 % of the MA median.	0%
Gardner	Block Group 1, Census Tract 7073, Worcester County, Massachusetts	Income	1	21	\$42608: this is 50 % of the MA median.	4%
Gardner	Block Group 2, Census Tract 7073, Worcester County, Massachusetts	Income	1	14	\$45188: this is 53 % of the MA median.	1%
Gardner	Block Group 2, Census Tract 7071, Worcester County, Massachusetts	Income	2	24	\$32390: this is 38 % of the MA median.	100%
Lancaster	Block Group 4, Census Tract 7131, Worcester County, Massachusetts	Minority	4	29.6 %	\$95278: this is 111 % of the MA median.	0.00%
Leominster	Block Group 2, Census Tract 7092.02, Worcester County, Massachusetts	Minority and Income	2	40.4 %	\$44,659: this is 52.0 % of the MA median.	10.10%
Leominster	Block Group 3, Census Tract 7092.01, Worcester County, Massachusetts	Minority and Income	3	30	\$55938: this is 65 % of the MA median.	3.00%
Leominster	Block Group 1, Census Tract 7092.02, Worcester County, Massachusetts	Minority	1	32.6 %	\$59,896: this is 69.8 % of the MA median.	6.8 %
Leominster	Block Group 2, Census Tract 7092.01, Worcester County, Massachusetts	Minority	2	31.4 %	\$62,802: this is 73.2 % of the MA median.	0.00%
Leominster	Block Group 3, Census Tract 7095.02, Worcester County, Massachusetts	Minority and Income	3	38	\$54840: this is 64 % of the MA median.	0.00%
Leominster	Block Group 3, Census Tract 7092.01, Worcester County, Massachusetts	Minority and Income	3	30.3 %	\$55,938: this is 65.2 % of the MA median.	2.8 %
Leominster	Block Group 1, Census Tract 7097.01, Worcester County, Massachusetts	Minority, Income and English isolation	1	51%	\$41,506: this is 48% of the MA median.	32%
Leominster	Block Group 2, Census Tract 7097.01, Worcester County, Massachusetts	Minority	2	58.9 %	\$62,551: this is 72.9 % of the MA median.	22.7 %
Leominster	Block Group 2, Census Tract 7095.02, Worcester County, Massachusetts	Minority	2	30.3 %	\$95,524: this is 111.3 % of the MA median.	2.10%
Leominster	Block Group 3, Census Tract 7096, Worcester County, Massachusetts	Minority and Income	3	55.60%	\$44554: this is 51.9 % of the MA median.	10.80%
Leominster	Block Group 1, Census Tract 7096, Worcester County, Massachusetts	Minority	1	33.8 %	\$70,000: this is 81.5 % of the MA median.	15.5 %
Leominster	Block Group 1, Census Tract 7094, Worcester County, Massachusetts	Minority and Income	1	38.7 %	\$22907: this is 26.7 % of the MA median.	19.50%
Leominster	Block Group 1, Census Tract 7095.02, Worcester County, Massachusetts	Minority	1	36.8 %	\$84,188: this is 98.1 % of the MA median.	0.00%
Leominster	Block Group 3, Census Tract 7091, Worcester County, Massachusetts	Minority and Income	3	47.70%	\$47,934: this is 55.8 % of the MA median.	7.00%
Leominster	Block Group 3, Census Tract 7092.02, Worcester County, Massachusetts	Minority and Income	3	44.5 %	\$35500: this is 41 % of the MA median.	7



**Attachment A: A1/B2 ACR Project
Massachusetts Department of Public Health (DPH) EJ Communities (5- Mile)**

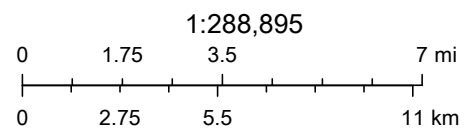
Municipality	Census Tract	Category	Block Group	Minority Population	Median Income	Language Isolation
Leominster	Block Group 2, Census Tract 7094, Worcester County, Massachusetts	Minority and Income	2	37.0 %	\$52140: this is 60.7 % of the MA median.	6.8 %
Orange	Block Group 1, Census Tract 405.01, Franklin County, Massachusetts	Income	1	6	\$50435: this is 59 % of the MA median.	0.00%
Orange	Block Group 3, Census Tract 405.02, Franklin County, Massachusetts	Income	3	7.60%	28692: this is 33.4 % of the MA median.	0.00%
Orange	Block Group 2, Census Tract 405.01, Franklin County, Massachusetts	Income	2	7.20%	\$49,805: this is 58.0 % of the MA median.	0.00%
Winchendon	Block Group 3, Census Tract 7011, Worcester County, Massachusetts	Minority	3	25.00%	\$97803: this is 114 % of the MA median	0.00%
Winchendon	Block Group 2, Census Tract 7011, Worcester County, Massachusetts	Income	2	14.00%	\$38542: this is 45 % of the MA median.	0.00%

2020 Environmental Justice Populations - 5 miles



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-  Override 1
-  MA Municipalities



Esri, HERE, Garmin, Earthstar Geographics

Attachment B: A1/B2 ACR Vulnerable Health EJ Criteria (1- Mile)

Municipality	EJ and Vulnerable Health EJ Criteria Status	Vulnerable Health Topic EJ Criteria Met	Statewide Rate per 1000
Gardner	Meets at least one Vulnerable Health EJ Criteria	Low Birth Weight Rate per 1000 Pediatric Asthma Ed Visits Rate per 10,000 Heart Attack Rate per 10,000 Lead Poisoning Rate per 1,000	216.8 83.1 26.423 17.6
Athol	Meets at least one Vulnerable Health EJ Criteria	Pediatric Asthma Ed Visits Rate per 10,000 Lead Poisoning Rate per 1,000 Low Birth Weight Rate per 1,000 Heart Attack Rate per 10,000	83.1 17.6 216.8 26.423
Fitchburg	Meets at least one Vulnerable Health EJ Criteria	Low Birth Weight Rate per 1,000 Lead Poisoning Rate per 1,000 Heart Attack Rate per 10,000 Pediatric Asthma Ed Visits Rate per 10,000	216.8 17.6 26.423 83.1
Leominster	Meets at least one Vulnerable Health EJ Criteria	Pediatric Asthma Ed Visits Rate per 10,000 Heart Attack Rate per 10,000 Lead Poisoning Rate per 1,000 Low Birth Weight Rate per 1,000	83.1 26.423 17.6 216.8
Lancaster	Meets at least one Vulnerable Health EJ Criteria	Pediatric Asthma Ed Visits Rate per 10,000 Lead Poisoning Rate per 1,000 Heart Attack Rate per 10,000	83.1 17.6 26.423

Formulario de evaluación de justicia ambiental

Nombre del proyecto	Proyecto de renovación de la condición de los bienes de la línea de transmisión A1B2: "Proyecto ACR de la línea de transmisión A1B2"
Fecha prevista de presentación a la Oficina de la Ley de Política Ambiental de Massachusetts (MEPA)	Julio 29 de 2022
Nombre del proponente	New England Power Company (NEP) – Compañía de energía de Nueva Inglaterra
Información de contacto (por ejemplo, consultor)	Theresa Portante, BSC Group, Inc. PO Box 60658 Worcester, MA 01606 617-896-4509
Sitio web público para el proyecto u otra ubicación física donde se pueden obtener los materiales del proyecto (si está disponible)	www.newenglandA1B2.com
Municipio y código postal del proyecto (si se conoce)	Warwick (01378), Royalston (01368), Winchendon (01475), Gardner (01440), Westminster (01473), Fitchburg (01420), Leominster (01453), Athol (01331), and Sterling (01564)
Tipo de proyecto* (enumere todos los que aplican)	Renovación de la línea de transmisión eléctrica aérea existente
¿Está el sitio del proyecto dentro de una llanura aluvial de 100 años asignada por FEMA? S/N/todavía desconocido	Sí, en segmentos cortos del Derecho de paso dispersos a lo largo del proyecto
Emissiones de GEI estimadas de los espacios acondicionados, si se conocen(haga clic aquí para la herramienta de estimación de GEI)	No es aplicable: no se proponen edificios como parte de este proyecto.

Descripción del Proyecto

<p>1. Proporcione una breve descripción del proyecto, incluido el tamaño total del sitio del proyecto y los pies cuadrados de los edificios y estructuras propuestos, si se conocen.</p> <p>New England Power Company posee y opera dos líneas aéreas de transmisión eléctrica ("cables") de 69 kilovoltios (kV) que se apoyan principalmente en torres de celosía ("estructuras"), las Líneas A1 y B2 ("Línea"), que están ubicadas dentro un corredor del Derecho de paso existente. El Derecho de paso comienza en el patio de maniobras Vernon #13 de NEP en Vernon, Vermont, atraviesa una parte de Nuevo Hampshire, ingresa a Massachusetts en Warwick y termina en la subestación Pratts Junction #225 ubicada en Sterling. Estas líneas se construyeron originalmente en 1909 para llevar electricidad desde la planta generadora hidroeléctrica en Vernon, Vermont hasta el condado de Worcester. Dentro de Massachusetts, las líneas atraviesan las siguientes ciudades con un total de aproximadamente 40 millas: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster y Sterling. Esta sección se considera la "línea principal".</p>

Además de la línea principal, también hay tres (3) líneas de derivación existentes que forman parte del proyecto que se derivan de la línea principal y entregan electricidad a tres (3) subestaciones existentes. Una de las líneas de derivación, conocida como Athol Tap, comienza dentro del Derecho de paso de la línea principal en Royalston y se extiende dentro de su propio Derecho de paso hasta la subestación Chestnut Hill en Ayer y tiene una longitud de 5,95 millas. El segundo es Crystal Lake Tap, que está ubicado dentro de su propio Derecho de paso, completamente dentro de Gardner, transmite electricidad a la subestación de Crystal Lake y tiene 1.17 millas de largo. Por último, está el East Westminster Tap, que transmite electricidad a la subestación de East Westminster, y tiene solo 0,01 millas de largo ya que esta subestación está ubicada dentro del Derecho de paso de la línea principal A1 y B2. A diferencia de la línea principal, las líneas Athol y Crystal Lake Tap están ubicadas en estructuras de postes de madera. En general, el proyecto abarca 54,26 millas del Derecho de paso en Massachusetts.

Debido al envejecimiento de las estructuras y al mal estado de las estructuras de las Líneas A1 y B2, NEP propone reconstruir las Líneas sobre nuevas estructuras. Las líneas de derivación mencionadas anteriormente también se reconstruirán. El propósito es garantizar que se proporcione electricidad confiable y continua a sus clientes atendidos por estas líneas dentro del condado de Worcester. Aunque las nuevas Líneas continuarán transmitiendo electricidad a 69 kilovoltios, NEP ha planeado y diseñado el Proyecto para respaldar la transmisión de un voltaje más alto, se anticipa dentro de la vida útil de la estructura que NEP deberá poder operar las Líneas a 115 kilovoltios para respaldar mayores volúmenes de recursos de energía renovable actualmente activos y previstos en esta región. NEP también instalará el cable a tierra primario óptico, que tiene un doble propósito al proporcionar la conexión a tierra eléctrica necesaria en caso de caída de rayos con la característica adicional de permitir las telecomunicaciones a lo largo de las líneas de transmisión y entre las subestaciones. Esta telecomunicación es fundamental para identificar problemas, como daños a la infraestructura por tormentas o apagones relacionados con tormentas, lo que permite que NEP responda rápidamente a cualquier problema con la transmisión de electricidad a lo largo de estas Líneas. Además, debido al acceso deficiente a lo largo de la mayoría de los corredores del Derecho de paso, se llevarán a cabo mejoras o el restablecimiento del acceso y la construcción de un nuevo acceso para realizar el trabajo propuesto y respaldar el mantenimiento futuro de las Líneas.

2. Enumere los umbrales de revisión anticipados de MEPA; código de regulaciones de Massachusetts (CMR); 301 11.03 (si se conocen)

Revisión al formulario de notificación ambiental (ENF):

- 301 CMR 11.03(3)(b)(1)(b)- Humedales, vías fluviales y esteros: alteración de 500 o más pies lineales de ribera a lo largo de una zona de pesca o ribera interior.
- 301 CMR 11.03(3)(b)(1)(f)- Humedales, vías fluviales y esteros: alteración de ½ o más acres de cualquier otro humedal.

ENF e Informe de impacto ambiental (EIR) Obligatorio:

- 301 CMR 11.03(1)(a) Terreno: Alteración directa de 50 o más acres de terreno, a menos que el Proyecto sea consistente con un plan de finca de conservación aprobado o un plan de tala de bosques u otro similar.
- 301 CMR 11.03(3)(a)(1)(a)- Humedales, vías fluviales y esteros: alteración de uno o más acres de humedales con vegetación limítrofes.
- 301 CMR 11.03(3)(a)(1)(b)- Humedales, vías fluviales y esteros: alteración de diez o más acres de cualquier otro humedal.
- 301 CMR 11.06(7)(b) - Justicia Ambiental: El secretario requerirá un IIA para cualquier Proyecto que esté ubicado dentro de un Área Geográfica Designada alrededor de una Población de Justicia

Ambiental.

3. Enumere todos los permisos anticipados estatales, locales y federales necesarios para el proyecto (si se conocen)

Agencia	Permiso, Revisión, o Aprobación
Federal	
Cuerpo de Ingenieros del Ejército de EE. UU. (USACE)	Sección 404 Permiso PCN y consultas bajo la Sección 106 de la Ley Nacional de Preservación Histórica y la Sección 7 de la Ley de Especies en Peligro de Extinción (ESA)
Agencia de Protección Ambiental de Estados Unidos (EPA)	Sistema Nacional de Eliminación de Descargas de Contaminantes (NPDES) Permiso General de Descargas de Aguas Pluviales y Construcción Actividades de drenaje/Plan de prevención de la contaminación por aguas pluviales (SWPPP)
Estatal	
Oficina Ejecutiva de Asuntos Energéticos y Ambientales (EOEEA)	Revisión de MEPA / Certificado del secretario
Departamento de Protección Ambiental de Massachusetts (MassDEP)	Artículo 401 Certificado Individual de Calidad de Agua; Variación de certificación de calidad del agua (WQC)
Programa de Patrimonio Natural y Especies en Peligro de Massachusetts (NHESP)	Ley de especies en peligro de extinción (ESA) de Massachusetts – Determinación de Tomar o No Tomar; Permiso de conservación (si es necesario)
Comisión Histórica de Massachusetts (MHC)	Consulta bajo M.G.L. C. 9 de acuerdo con 950 CMR 70-71
Junta de Emplazamiento de Instalaciones Energéticas (EFSB)	Aprobación de la petición
Departamento de Conservación y Recreación (DCR)	Permiso de acceso a la construcción
Departamento de Transporte de Massachusetts (MassDOT)	Permiso para acceder a carreteras estatales/permisos de servicios públicos no municipales para cruzar carreteras estatales con líneas de servicios públicos
Local	
Comisiones de Conservación en Athol, Fitchburg, Gardner, Leominster, Royalston, Sterling, Warwick, Westminster, y Winchendon	Orden de Condiciones según la Ley de Protección de Humedales de Massachusetts (MA WPA)

4. Identifique las poblaciones y características de Justicia Ambiental (JA) -- minoría, ingresos, aislamiento de inglés— dentro de las 5 millas del sitio del proyecto (puede adjuntar un mapa de [Espectador para mapas de JA](#) en lugar de una descripción

Ver Acoplamiento A

5. Identifique cualquier municipio o tracto censal que cumpla con la definición de "criterios de JA de salud vulnerable" en la [herramienta de JA del DPH](#) ubicado en su totalidad o en parte dentro de un radio de 1 milla del sitio del proyecto

Ver Acoplamiento B

6. Identifique los impactos ambientales y de salud pública potenciales a corto y largo plazo que pueden afectar a las poblaciones de JA y cualquier mitigación anticipada

De las 18 poblaciones de JA dentro del radio de 1 milla del Derecho de paso, solo seis (6) de las poblaciones se superponen con el Derecho de paso o están cerca del Derecho de paso. Estas Poblaciones se encuentran en los municipios de Athol, Gardner, Fitchburg y Leominster. El Derecho de paso pasa a través o está adyacente a dos (2) poblaciones en Athol, dos (2) poblaciones en Gardner, una (1) en Fitchburg y una (1) en Leominster. De las 54.26 millas de Derecho de paso, solo 4.95 millas de Derecho de paso se encuentran dentro de un tracto censal de JA.

Athol	<ul style="list-style-type: none">• Dentro de los 100 pies del grupo de bloque 1, Tracto censal 7031.• La Subestación Chestnut Hill está ubicada dentro del Grupo de Bloque 1, Tracto censal 7033.• El grupo de bloques 1, Tracto censal 7031 está ubicado aproximadamente a 227 pies del Derecho de paso.
Gardner	Grupo de bloque 1, Tracto censal 7075, y Grupo de bloque 2, Tracto censal 7075
Leominster	Grupo de bloque 2, Tracto censal 7092.02
Fitchburg	Grupo de bloque 2, Tracto censal 7103

Los impactos ambientales y de salud pública potenciales del Proyecto y la mitigación anticipada incluyen lo siguiente:

Calidad del aire

Las actividades del período de construcción, como la nivelación, la construcción de carreteras, el desplazamiento de vehículos y otros trabajos de perturbación de la tierra pueden provocar un aumento temporal del polvo en el aire. Los impactos en la calidad del aire se minimizarán manejando el control del movimiento del polvo o soplando en el aire con prácticas como esparcir mantillo de madera o paja y usar camiones cisterna para rociar la tierra seca para mantenerla húmeda. El potencial de generación de polvo solo se anticipa durante el período de construcción. Después de la construcción, el suelo será estabilizado y revegetado. Además, se requiere que los equipos que funcionan con diésel utilicen combustible diésel con contenido ultra bajo de azufre. Todo equipo de construcción que no sea de carreteras que funcione con diésel y que tenga una potencia nominal de 50 caballos de fuerza o más y que se utilice en el Proyecto durante 30 días o más deberá instalar dispositivos de control de emisiones. Los impactos de estas emisiones serán mínimos y no se anticipa que causen impactos a la salud pública.

Calidad del agua

El proyecto incorporará medidas de protección y prevención para minimizar y evitar impactos en la calidad del agua. El Derecho de paso cruza muchas áreas de humedales, arroyos y ríos. Para proteger la calidad del agua y estas áreas sensibles, se construirán caminos temporales con esteras de madera. Las esteras de madera se componen de vigas de madera, atornilladas juntas, y suelen tener 4 pies de ancho por 16 pies de largo. Se colocan temporalmente sobre el suelo y la vegetación. Estas esteras permiten que máquinas y vehículos pesados atraviesen áreas sensibles sin dañar el suelo o las raíces de la vegetación y también se colocan de manera que no afecten el flujo de agua en los arroyos. Estas esteras se quitarán cuando se complete la construcción y se restaurarán los humedales. Además, se utilizarán las mejores prácticas de manejo, como el uso de zarzos de paja, vallas de sedimentos, características de manejo de aguas pluviales y otras medidas de control para evitar que la tierra y otros materiales se transporten a los humedales y arroyos. Usando estas Mejores Prácticas de Manejo, cualquier impacto a la calidad del agua será insignificante y temporal y no se prevé que cause impactos a la salud pública.

Protección de Tierras y Espacios Abiertos

Hay una (1) Población de JA con Espacio Abierto Municipal (Campo de Golf Municipal de Gardner) dentro del Derecho de paso del Proyecto, específicamente, grupo de bloque 1, Tracto Censal 7075 en Gardner. El acceso al campo de golf no se verá afectado por el Proyecto ya que las actividades se limitarán al Derecho de paso existente.

Las líneas A1 y B2 atraviesan varios bosques estatales que pertenecen y son mantenidos por el Departamento de Conservación y Recreación de Massachusetts (DCR). Hay una (1) población de JA dentro del Derecho de paso del proyecto, grupo de bloque 2, tracto censal 7103, ubicada dentro de una propiedad DCR (bosque estatal de Leominster). Esta propiedad no cuenta con vías de acceso, senderos, ni estacionamientos de acceso público. Además, las actividades del Proyecto se limitarán al Derecho de paso existente. El acceso a tierras protegidas y espacios abiertos dentro de las poblaciones de JA no será afectado.

Ruido

Las comunidades de JA que tienen más probabilidades de tener impactos de ruido temporales son las comunidades que están directamente dentro o están ubicadas cerca del Derecho de paso. Las poblaciones de JA que tienen un desarrollo relativamente denso son grupo de bloque 1, Tracto censal 7075 en Gardner y grupo de bloque 1, Tracto censal 7031 en Athol. La población de JA en Athol está aproximadamente a 100 pies de la línea de toma de Athol, mientras que el Derecho de paso pasa por la población de JA en Gardner. Los impactos de ruido asociados con las actividades del período de construcción son de naturaleza temporal y se espera que sean mínimos. Cuando la construcción se lleve a cabo junto a las residencias, NEP notificará a los propietarios antes del comienzo del trabajo. Las actividades que generen ruido se llevarán a cabo de acuerdo con los requisitos locales y estatales y no se anticipa que causen impactos en la salud pública.

Tráfico

Los impactos al tráfico durante la construcción del proyecto serán menores e intermitentes. Se accederá a las áreas de trabajo principalmente desde rutas de acceso propiedad de NEP o caminos de ciudades menores. Dentro del grupo de bloque 2, Tracto censal 7103 en Fitchburg, se requerirá acceso temporal desde la ruta 2. NEP obtendrá los permisos necesarios de MassDOT para el acceso. Una vez en el sitio, el tráfico de vehículos se limitará dentro o en las proximidades del Derecho de paso. Dado que el Derecho de paso es una instalación no tripulada, no habrá impactos permanentes en los patrones de tráfico o el uso de las carreteras existentes y no se anticipan impactos en la salud pública del tráfico.

7. Identifique los beneficios del proyecto, incluidos los "Beneficios ambientales" como se define en 301 CMR 11.02, que pueden mejorar las condiciones ambientales o la salud pública de la población de JA

Los "beneficios ambientales" potenciales incluyen:

- Aumento de la resiliencia de la línea de transmisión general. Al instalar cimientos mejorados y estructuras más sólidas, esta infraestructura estará mejor preparada para soportar fuertes vientos y tormentas.
- La nueva línea aérea será más grande, lo que permitirá que fluya más electricidad durante los momentos de alto uso, como los eventos de calor extremo, que se anticipa que aumenten en frecuencia debido al cambio climático.
- La instalación del cable a tierra primario óptico permitirá una mejor comunicación entre las subestaciones, lo que dará como resultado un mejor tiempo de respuesta durante emergencias e interrupciones relacionadas con tormentas, lo que aumentará la seguridad pública.

Otros beneficios de este proyecto que no están expresamente incluidos bajo la definición de "Beneficios Ambientales" consisten en:

- Reducir la perturbación general de los propietarios de terrenos adyacentes, las áreas de recursos de humedales y el hábitat de especies raras a lo largo del tiempo mediante la planificación para el futuro y la reducción de la probabilidad de que se repitan varios proyectos, lo que reduce los impactos ambientales y los costos para los clientes de New England Power Company.
- El reemplazo de las Líneas tendrá el beneficio adicional de permitir que más recursos de energía renovable se conecten al sistema. Abordar la crisis del cambio climático requiere una gran expansión de las energías renovables y la infraestructura necesaria para apoyar y entregar esa energía. NEP está tomando medidas activamente para garantizar que su sistema esté listo para enfrentar este desafío crítico. Reemplazar infraestructura como las Líneas A1/B2 ayuda a lograr esta meta. Las líneas de reemplazo tendrán clasificaciones de kilovoltios más altas que admitirán mayores volúmenes de recursos de energía renovable actualmente activos y previstos en esta región. Esta visión a más largo plazo está respaldada por los resultados iniciales compartidos recientemente del estudio ISO-NE 2050, donde sería necesaria una actualización a 115 kilovoltios según los supuestos del estudio actual y los pronósticos a largo plazo para la Commonwealth.

8. Describa cómo la comunidad puede solicitar una reunión para discutir el proyecto y cómo la comunidad puede solicitar servicios de interpretación de lenguaje oral en la reunión. Especifique cómo solicitar otras adaptaciones, incluidas reuniones fuera del horario laboral y en lugares cercanos al transporte público.

Las comunidades y los miembros del público pueden acceder a la información relacionada con el proyecto de las siguientes maneras:

- Un sitio web público, alojado en la siguiente dirección web: www.newenglandA1B2.com
- Una reunión pública virtual organizada por NEP
 - Los destinatarios de este formulario de evaluación recibirán información relacionada con esta reunión por correo electrónico; se proporcionará traducción en español.
 - La notificación de esta reunión virtual se publicará en los periódicos locales de cada municipio antes de la fecha de la reunión, se proporcionará traducción.
- Las copias impresas de los materiales del proyecto estarán disponibles en las bibliotecas municipales.
- Si tiene más preguntas, comuníquese al 844-500-3536 o envíenos un correo electrónico a info@newenglandA1B2.com

Los destinatarios de este formulario incluyen organizaciones en la Lista de Referencia de JA proporcionada por la Oficina Ejecutiva de Energía y Asuntos Ambientales de Massachusetts según el Protocolo de Participación Pública. Además, detalles de la reunión pública virtual se enviará a los administradores de la ciudad y propietarios y/o inquilinos de propiedades dentro de una comunidad de JA que se encuentra dentro de la línea principal A1 y B2 y el Derecho de paso de la línea Tap.

Acoplamiento A: Proyecto A1/B2 ACR
Massachusetts Departamento de Salud Pública (DPH) Comunidad de Justicia Ambiental (5- Milla)

Municipio	El Rastro del Censo	Categoría	Grupo de Bloque	Población Minoritaria	Ingresos Mediana	Aislamiento del Lenguaje
Athol	Grupo de Bloque 1, El Rastro del Censo 7033, El Condado de Worcester, Massachusetts	Ingresos	1	3.50%	\$42292: esto es el 49.3 % de la mediana de la MA.	1.20%
Athol	Grupo de Bloque 2, El Rastro del Censo 7031, El Condado de Worcester, Massachusetts	Ingresos	2	5.00%	\$43938: esto es el 51 % de la mediana de la MA.	2.00%
Athol	Grupo de Bloque, El Rastro del Censo 7031, El Condado de Worcester, Massachusetts	Ingresos	1	8.00%	\$35556: esto es el 41 % de la mediana de la MA.	2.00%
Athol	Grupo de Bloque 3, El Rastro del Censo 7032, El Condado de Worcester, Massachusetts	Minoría	3	33.00%	0	0.00%
Clinton	Grupo de Bloque 3, El Rastro del Censo 7163, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	51.00%	\$46534: esto es el 54 % de la mediana de la MA.	9.00%
Clinton	Grupo de Bloque 2, El Rastro del Censo 7191, El Condado de Worcester, Massachusetts	Minoría e Ingresos	2	38.00%	\$55536: esto es el 65 % de la mediana de la MA.	0.00%
Clinton	Grupo de Bloque 3, El Rastro del Censo 7161, El Condado de Worcester, Massachusetts	Minoría	3	36.60%	\$0: esto es el 0.0 % de la mediana de la MA.	0.00%
Clinton	Grupo de Bloque 2, El Rastro del Censo 7162, El Condado de Worcester, Massachusetts	Minoría e ingresos	2	25.5 %	\$42900: esto es el 50.0 % de la mediana de la MA.	7.8 %
Fitchburg	Grupo de Bloque 2, El Rastro del Censo 7103, El Condado de Worcester, Massachusetts	Minoría	2	27.00%	\$62353: esto es el 73 % de la mediana de la MA.	2.00%
Fitchburg	Grupo de Bloque 3, El Rastro del Censo 7105, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	35.00%	\$50163: esto es el 58 % de la mediana de la MA.	4.00%
Fitchburg	Grupo de Bloque 2, El Rastro del Censo 7105, El Condado de Worcester, Massachusetts	Minoría e Ingresos	2	50%	\$ 27031: esto es el 31.5 % de la mediana de la MA	4.30%
Fitchburg	Grupo de Bloque 1, El Rastro del Censo 7105, El Condado de Worcester, Massachusetts	Minoría e Ingresos	1	51.9 %	\$54931: esto es el 64.0 % de la mediana de la MA.	7.1 %
Fitchburg	Grupo de Bloque 5, El Rastro del Censo 7106, El Condado de Worcester, Massachusetts	Minoría e Ingresos	5	53.5 %	\$44175: esto es el 51.5 % de la mediana de la MA.	0.00%
Fitchburg	Grupo de Bloque 3, El Rastro del Censo 7108, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	47.1 %	\$28750: esto es el 33.5 % de la mediana de la MA.	3.9 %
Fitchburg	Grupo de Bloque 2, El Rastro del Censo 7108, El Condado de Worcester, Massachusetts	Minoría e Ingresos	2	56.9 %	\$37188: esto es el 43.3 % de la mediana de la MA.	0.00%
Fitchburg	Grupo de Bloque 4, El Rastro del Censo 7101, El Condado de Worcester, Massachusetts	Minoría e Ingresos	4	53.00%	\$48227: esto es el 56.2 % de la mediana de la MA.	9.70%
Fitchburg	Grupo de Bloque 1, El Rastro del Censo 7104, El Condado de Worcester, Massachusetts	Minoría	1	51.7 %	\$56932: esto es el 66.3 % de la mediana de la MA	4.4 %
Fitchburg	Grupo de Bloque 4, El Rastro del Censo 7106, El Condado de Worcester, Massachusetts	Minoría	4	58.7 %	\$86168: esto es el 100.4 % de la mediana de la MA.	2.00%
Fitchburg	Grupo de Bloque 3, El Rastro del Censo 7106, El Condado de Worcester, Massachusetts	Minoría	3	56.8 %	\$0: esto es el 0.00 % de la mediana de la MA.	16.30%

Acoplamiento A: Proyecto A1/B2 ACR
Massachusetts Departamento de Salud Pública (DPH) Comunidad de Justicia Ambiental (5- Milla)

Municipio	El Rastro del Censo	Categoría	Grupo de Bloque	Población Minoritaria	Ingresos Mediana	Aislamiento del Lenguaje
Fitchburg	Grupo de Bloque 2, El Rastro del Censo 7107, El Condado de Worcester, Massachusetts	Minoría e Ingresos	2	41.0 %	\$18958: esto es el 22.1 % de la mediana de la MA	11.6 %
Fitchburg	Grupo de Bloque 1, El Rastro del Censo 7107, El Condado de Worcester, Massachusetts	Minoría e Ingresos	1	61.3 %	\$12418: esto es el 14.5 % de la mediana de la MA	17.1 %
Fitchburg	Grupo de Bloque 1, El Rastro del Censo 7108, El Condado de Worcester, Massachusetts	Minoría	1	40.3 %	\$60313: esto es el 70.3 % de la mediana de la MA.	15.3 %
Fitchburg	Grupo de Bloque 2, El Rastro del Censo 7106, El Condado de Worcester, Massachusetts	Minoría	2	57.60%	\$80526: esto es el 93.8 % de la mediana de la MA.	11.10%
Fitchburg	Grupo de Bloque 3, El Rastro del Censo 7110, El Condado de Worcester, Massachusetts	Minoría	3	54.2 %	\$0: esto es el 0.0 % de la mediana de la MA.	3.8 %
Fitchburg	Grupo de Bloque 2, El Rastro del Censo 7110, El Condado de Worcester, Massachusetts	Minoría e Ingresos	2	35.1 %	\$49517: esto es el 57.7 % de la mediana de la MA.	3.8 %
Fitchburg	Grupo de Bloque 1, El Rastro del Censo 7110, El Condado de Worcester, Massachusetts	Ingresos	1	14.8 %	\$51406: esto es el 59.9 % de la mediana de la MA.	0.00%
Fitchburg	Grupo de Bloque 1, El Rastro del Censo 7101, El Condado de Worcester, Massachusetts	Minoría	1	46.8 %	\$75714: esto es el 88.2 % de la mediana de la MA.	8.20%
Fitchburg	Grupo de Bloque 3, El Rastro del Censo 7101, El Condado de Worcester, Massachusetts	Minoría	3	42.4 %	\$63433: esto es el 73.9 % de la mediana de la MA.	1.5 %
Fitchburg	Grupo de Bloque 1, El Rastro del Censo 7106, El Condado de Worcester, Massachusetts	Minoría e Ingresos	1	52.3 %	\$39045: esto es el 45.5 % de la mediana de la MA	2.8 %
Fitchburg	Grupo de Bloque 4, El Rastro del Censo 7102, El Condado de Worcester, Massachusetts	Minoría e Ingresos	4	35	\$55160: esto es el 64 % de la mediana de la MA.	3
Fitchburg	Grupo de Bloque 2, El Rastro del Censo 7101, El Condado de Worcester, Massachusetts	Minoría e Ingresos	2	71.7 %	\$41800: esto es el 48.7 % de la mediana de la MA	0.00%
Fitchburg	Grupo de Bloque 1, El Rastro del Censo 7102, El Condado de Worcester, Massachusetts	Minoría	1	30.8 %	\$90078: esto es el 104.9 % de la mediana de la MA.	12.60%
Fitchburg	Grupo de Bloque 2, El Rastro del Censo 7102, El Condado de Worcester, Massachusetts	Minoría	2	25.70%	\$68,818: esto es el 80.2 % de la mediana de la MA.	3.10%
Gardner	Grupo de Bloque 1, El Rastro del Censo 7075, El Condado de Worcester, Massachusetts	Ingresos	1	14	\$56023: esto es el 65 % de la mediana de la MA.	5%
Gardner	Grupo de Bloque 2, El Rastro del Censo 7075, El Condado de Worcester, Massachusetts	Minoría	2	33	\$63401: esto es el 74 % de la mediana de la MA.	2%
Gardner	Grupo de Bloque 3, El Rastro del Censo 7075, El Condado de Worcester, Massachusetts	Minoría	3	34	\$80221: esto es el 93 % de la mediana de la MA.	0%
Gardner	Grupo de Bloque 1, El Rastro del Censo 7072, El Condado de Worcester, Massachusetts	Ingresos	1	18	\$32746: esto es el 38 % de la mediana de la MA.	5%
Gardner	Grupo de Bloque 1, El Rastro del Censo 7071, El Condado de Worcester, Massachusetts	Ingresos	1	1	\$41397: esto es el 48 % de la mediana de la MA.	1%
Gardner	Grupo de Bloque 3, El Rastro del Censo 7073, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	40	\$40486: esto es el 47 % de la mediana de la MA.	0%

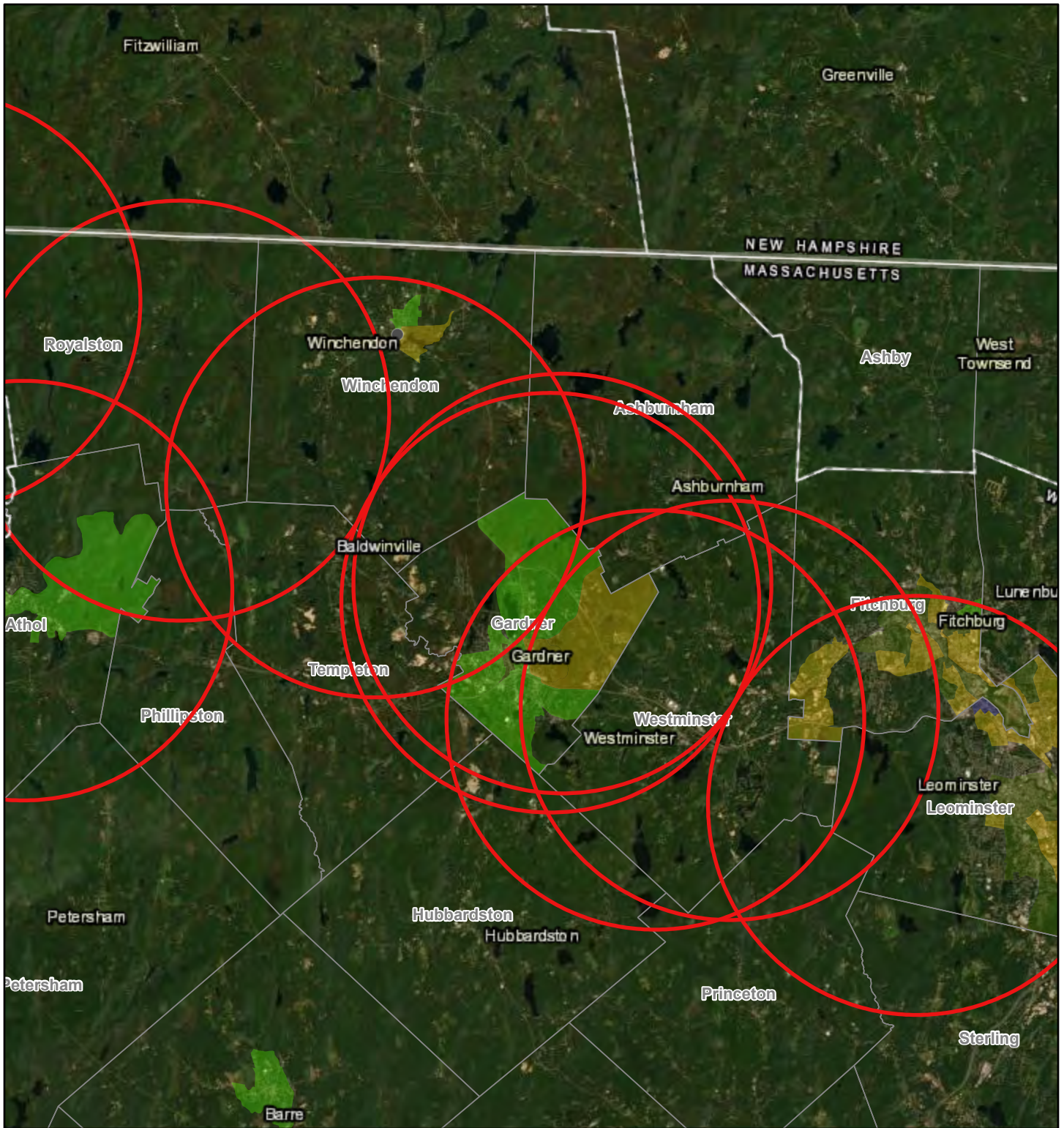
Acoplamiento A: Proyecto A1/B2 ACR
Massachusetts Departamento de Salud Pública (DPH) Comunidad de Justicia Ambiental (5- Milla)

Municipio	El Rastro del Censo	Categoría	Grupo de Bloque	Población Minoritaria	Ingresos Mediana	Aislamiento del Lenguaje
Gardner	Grupo de Bloque 2, El Rastro del Censo 7074, El Condado de Worcester, Massachusetts	Ingresos	2	18	\$51635: esto es el 60 % de la mediana de la MA.	0%
Gardner	Grupo de Bloque 1, El Rastro del Censo 7073, El Condado de Worcester, Massachusetts	Ingresos	1	21	\$42608: esto es el 50 % de la mediana de la MA.	4%
Gardner	Grupo de Bloque 2, El Rastro del Censo 7073, El Condado de Worcester, Massachusetts	Ingresos	1	14	\$45188: esto es el 53 % de la mediana de la MA.	1%
Gardner	Grupo de Bloque 2, El Rastro del Censo 7071, El Condado de Worcester, Massachusetts	Ingresos	2	24	\$32390: esto es el 38 % de la mediana de la MA.	100%
Lancaster	Grupo de Bloque 4, El Rastro del Censo 7131, El Condado de Worcester, Massachusetts	Minoría	4	29.6 %	\$95278: esto es el 111 % de la mediana de la MA.	0.00%
Leominster	Grupo de Bloque 2, El Rastro del Censo 7092.02, El Condado de Worcester, Massachusetts	Minoría e Ingresos	2	40.4 %	\$44,659: esto es el 52.0 % de la mediana de la MA.	10.10%
Leominster	Grupo de Bloque 3, El Rastro del Censo 7092.01, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	30	\$55938: esto es el 65 % de la mediana de la MA.	3.00%
Leominster	Grupo de Bloque 1, El Rastro del Censo 7092.02, El Condado de Worcester, Massachusetts	Minoría	1	32.6 %	\$59,896: esto es el 69.8 % de la mediana de la MA.	6.8 %
Leominster	Grupo de Bloque 2, El Rastro del Censo 7092.01, El Condado de Worcester, Massachusetts	Minoría	2	31.4 %	\$62,802: esto es el 73.2 % de la mediana de la MA.	0.00%
Leominster	Grupo de Bloque 3, El Rastro del Censo 7095.02, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	38	\$54840: esto es el 64 % de la mediana de la MA.	0.00%
Leominster	Grupo de Bloque 3, El Rastro del Censo 7092.01, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	30.3 %	\$55,938: esto es el 65.2 % de la mediana de la MA.	2.8 %
Leominster	Grupo de Bloque 1, El Rastro del Censo 7097.01, El Condado de Worcester, Massachusetts	Minoría, Ingresos, e Aislamiento del Lenguaje	1	51%	\$41,506: esto es el 48% de la mediana de la MA.	32%
Leominster	Grupo de Bloque 2, El Rastro del Censo 7097.01, El Condado de Worcester, Massachusetts	Minoría	2	58.9 %	\$62,551: esto es el 72.9 % de la mediana de la MA.	22.7 %
Leominster	Grupo de Bloque 2, El Rastro del Censo 7095.02, El Condado de Worcester, Massachusetts	Minoría	2	30.3 %	\$95,524: esto es el 111.3 % de la mediana de la MA.	2.10%
Leominster	Grupo de Bloque 3, El Rastro del Censo 7096, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	55.60%	\$44554: esto es el 51.9 % de la mediana de la MA.	10.80%
Leominster	Grupo de Bloque 1, El Rastro del Censo 7096, El Condado de Worcester, Massachusetts	Minoría	1	33.8 %	\$70,000: esto es el 81.5 % de la mediana de la MA.	15.5 %
Leominster	Grupo de Bloque 1, El Rastro del Censo 7094, El Condado de Worcester, Massachusetts	Minoría e Ingresos	1	38.7 %	\$22907: esto es el 26.7 % de la mediana de la MA.	19.50%
Leominster	Grupo de Bloque 1, El Rastro del Censo 7095.02, El Condado de Worcester, Massachusetts	Minoría	1	36.8 %	\$84,188: esto es el 98.1 % de la mediana de la MA.	0.00%
Leominster	Grupo de Bloque 3, El Rastro del Censo 7091, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	47.70%	\$47,934: esto es el 55.8 % de la mediana de la MA.	7.00%
Leominster	Grupo de Bloque 3, El Rastro del Censo 7092.02, El Condado de Worcester, Massachusetts	Minoría e Ingresos	3	44.5 %	\$35500: esto es el 41 % de la mediana de la MA.	7



Acoplamiento A: Proyecto A1/B2 ACR
Massachusetts Departamento de Salud Pública (DPH) Comunidad de Justicia Ambiental (5- Milla)

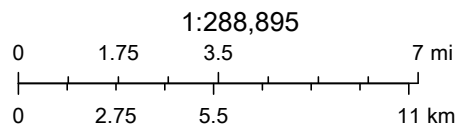
Municipio	El Rastro del Censo	Categoría	Grupo de Bloque	Población Minoritaria	Ingresos Mediana	Aislamiento del Lenguaje
Leominster	Grupo de Bloque 2, El Rastro del Censo 7094, El Condado de Worcester, Massachusetts	Minoría e Ingresos	2	37.0 %	\$52140: esto es el 60.7 % de la mediana de la MA.	6.8 %
Orange	Grupo de Bloque 1, El Rastro del Censo 405.01, El Condado de Franklin, Massachusetts	Ingresos	1	6	\$50435: esto es el 59 % de la mediana de la MA.	0.00%
Orange	Grupo de Bloque 3, El Rastro del Censo 405.02, El Condado de Franklin, Massachusetts	Ingresos	3	7.60%	28692: esto es el 33.4 % de la mediana de la MA.	0.00%
Orange	Grupo de Bloque 2, El Rastro del Censo 405.01, El Condado de Franklin, Massachusetts	Ingresos	2	7.20%	\$49,805: esto es el 58.0 % de la mediana de la MA.	0.00%
Winchendon	Grupo de Bloque 3, El Rastro del Censo 7011, El Condado de Worcester, Massachusetts	Minoría	3	25.00%	\$97803: esto es el 114 % de la mediana de la MA	0.00%
Winchendon	Grupo de Bloque 2, El Rastro del Censo 7011, El Condado de Worcester, Massachusetts	Ingresos	2	14.00%	\$38542: esto es el 45 % de la mediana de la MA.	0.00%

2020 Comunidad de Justicia Ambiental 5- Milla



2/17/2022, 6:30:17 PM

-  Override 1
-  MA Municipalities



Esri, HERE, Garmin, Earthstar Geographics

Acoplamiento B: Proyecto A1/B2 ACR Los Criterios Salud de Justicia Ambiental (1- Milla)

Municipio	Justicia Ambiental y Estado de los Criterios de Justicia Ambiental Vulnerables de Salud	Se Cumplieron Criterios de Justicia Ambiental Vulnerables de Salud	Tasa de Estado por 1000
Gardner	Se Reúne al Menos Uno de los Criterios de Justicia Ambiental Vulnerables de Salud	Baja Tasa de Peso al Nacer por cada 1.000	216.8
		Asma Pediátrica Urgencias Medicina Tasa de Visitas por 10.000	83.1
		Tasa de infarto por cada 10.000	26.423
		Tasa de envenenamiento por plomo por 1.000	17.6
Athol	Se Reúne al Menos Uno de los Criterios de Justicia Ambiental Vulnerables de Salud	Asma Pediátrica Urgencias Medicina Tasa de Visitas por 10.000	83.1
		Tasa de envenenamiento por plomo por 1.000	17.6
		Baja Tasa de Peso al Nacer por 1.000	216.8
		Tasa de infarto por 10.000	26.423
Fitchburg	Se Reúne al Menos Uno de los Criterios de Justicia Ambiental Vulnerables de Salud	Baja Tasa de Peso al Nacer por 1.000	216.8
		Tasa de envenenamiento por plomo por 1.000	17.6
		Tasa de infarto por 10.000	26.423
		Asma Pediátrica Urgencias Medicina Tasa de Visitas por 10.000	83.1
Leominster	Se Reúne al Menos Uno de los Criterios de Justicia Ambiental Vulnerables de Salud	Asma Pediátrica Urgencias Medicina Tasa de Visitas por 10.000	83.1
		Tasa de infarto por cada 10.000	26.423
		Tasa de envenenamiento por plomo por 1.000	17.6
		Baja Tasa de Peso al Nacer por 1.000	216.8
Lancaster	Se Reúne al Menos Uno de los Criterios de Justicia Ambiental Vulnerables de Salud	Asma Pediátrica Urgencias Medicina Tasa de Visitas por 10.000	83.1
		Tasa de envenenamiento por plomo por 1.000	17.6
		Tasa de infarto por 10.000	26.423

A1/B2 ACR EJ Reference List
 Statewide Environmental Justice Community Based Organizations (received 2/23/2022)

Statewide Environmental Justice Community Based Organizations					
First Name	Last Name	Title	Phone	Email	Affiliation
Ben	Hellerstein	MA State Director	617-747-4368	ben@environmentmassachusetts.org	Environment Massachusetts
Cindy	Luppi	New England Director	617-338-8131 x208	cluppi@cleanwater.org	Clean Water Action
Deb	Pasternak	Director, MA Chapter	617-423-5775	deb.pasternak@sierraclub.org	Sierra Club MA
Elvis	Mendez	Organizing Director	508 904-5359	elvis@n2nma.org	Neighbor to Neighbor
Heather	Clish	Director of Conservation & Recreation Policy	(617) 523-0655	hclish@outdoors.org	Appalachian Mountain Club
Heidi	Ricci	Director of Policy	Not Provided	hricci@massaudubon.org	Mass Audubon
Julia	Blatt	Executive Director	(617) 714-4272	juliablatt@massriversalliance.org	Mass Rivers Alliance
Kelly	Boling	MA & RI State Director	(617) 367-6200	kelly.boling@tpl.org	The Trust for Public Land
Kerry	Bowie	Board President	Not Provided	kerry@msaadapartners.com	Browning the GreenSpace
Nancy	Goodman	Vice President for Policy	Not Provided	ngoodman@environmentalleague.org	Environmental League of MA
Pat	Stanton	Project Manager	Not Provided	pstanton@e4thefuture.org	E4TheFuture
Rob	Moir	Executive Director	Not Provided	rob@oceanriver.org	Ocean River Institute
Robb	Johnson	Executive Director	(978) 443-2233	robb@massland.org	Mass Land Trust Coalition
Sarah	Dooling	Executive Director	Not Provided	sarah@massclimateaction.net	Mass Climate Action Network (MCAN)
Staci	Rubin	Senior Attorney	617 350-0990	srubin@clf.org	Conservation Law Foundation
Sylvia	Broude	Executive Director	617 292-4821	sylvia@communityactionworks.org	Community Action Works
Tali	Smookler	Organizing Director	508 308-9261	tsmookler@umassaction.org	Unitarian Universalist Mass Action Network
Winston	Vaughan	Director of Climate Solutions	Not Provided	wvaughan@hcwh.org	Healthcare without Harm

A1/B2 ACR EJ Reference List
 Indigenous Organizations (received 2/23/2022)

Indigenous Organizations					
First Name	Last Name	Title	Phone	Email	Affiliation
Alma	Gordon	President	Not Provided	tribalcouncil@chappaquiddick-wampanoag.org	Chappaquiddick Tribe of the Wampanoag Nation
Bettina	Washington	Tribal Historic Preservation Officer	508-560-9014	thpo@wampanoagtribe-nsn.gov	Wampanoag Tribe of Gay Head (Aquinnah)
Cheryll	Toney Holley	Chair	774-317-9138	crwritings@aol.com	Nipmuc Nation (Hassanamisco Nipmucs)
John	Peters, Jr.	Executive Director	617-573-1292	john.peters@mass.gov	Massachusetts Commission on Indian Affairs (MCIA)
Kenneth	White	Council Chairman	508-347-7829	acw1213@verizon.net	Chaubunagungamaug Nipmuck Indian Council
Melissa	Ferretti	Chair	(508) 304-5023	melissa@herringpondtribe.org	Herring Pond Wampanoag Tribe
Patricia	D. Rucker	Council Chair	Not Provided	rockerpatriciad@verizon.net	Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan
Raquel	Halsey	Executive Director	(617) 232-0343	rhalsey@naicob.org	North American Indian Center of Boston

A1/B2 ACR EJ Reference List
Federally Recognized Tribes (received 2/23/2022)

Federally Recognized Tribes					
First	Last	Title	Phone	Email	Affiliation
Bettina	Washington	Tribal Historic Preservation Officer	508-560-9014	thpo@wampanoagtribe-nsn.gov	Wampanoag Tribe of Gay Head (Aquinnah)
Bonney	Hartley	Historic Preservation Manager	413-884-6048	bonney.hartley@mohican-nsn.gov	Stockbridge-Munsee Tribe
Brian	Weeden	Chair	774-413-0520	Brian.Weeden@mwtribe-nsn.gov	Mashpee Wampanoag Tribe

**A1/B2 ACR EJ Reference List
Distribution List**

Original Contacts:

ben@environmentmassachusetts.org; cluppi@cleanwater.org; deb.pasternak@sierraclub.org; elvis@n2nma.org; hclish@outdoors.org; hricci@massaudubon.org; juliablatt@massriversalliance.org; kelly.boling@tpl.org; kerry@msaadapartners.com; ngoodman@environmentalleague.org; pstanton@e4thefuture.org; rob@oceanriver.org; robb@massland.org; sarah@massclimateaction.net; srubin@df.org; sylvia@communityactionworks.org; tsmookler@uumassaction.org; wvaughan@hcwh.org; tribalcouncil@chappaquiddick-wampanoag.org; thpo@wampanoagtribe-nsn.gov; crwritings@aol.com; john.peters@mass.gov; acw1213@verizon.net; melissa@herringpondtribe.org; rockerpatriciad@verizon.net; rhalsey@naicob.org; thpo@wampanoagtribe-nsn.gov; bonney.hartley@mohican-nsn.gov; Brian.Weeden@mwtribe-nsn.gov;

Additional Contacts:

- leigh-anne@communityactionworks.org:
 - added on 6/14/22 as Sylvia Broude sylvia@communityactionworks.org is on a leave of absence
- tribalcouncil@chappaquiddickwampanoag.org
 - Added on 6/20/22 as tribalcouncil@chappaquiddick-wampanoag.org failed to send.

Current List for Distribution:

ben@environmentmassachusetts.org; cluppi@cleanwater.org; deb.pasternak@sierraclub.org; elvis@n2nma.org; hclish@outdoors.org; hricci@massaudubon.org; juliablatt@massriversalliance.org; kelly.boling@tpl.org; kerry@msaadapartners.com; ngoodman@environmentalleague.org; pstanton@e4thefuture.org; rob@oceanriver.org; robb@massland.org; sarah@massclimateaction.net; srubin@df.org; sylvia@communityactionworks.org; tsmookler@uumassaction.org; wvaughan@hcwh.org; tribalcouncil@chappaquiddick-wampanoag.org; thpo@wampanoagtribe-nsn.gov; crwritings@aol.com; john.peters@mass.gov; acw1213@verizon.net; melissa@herringpondtribe.org; rockerpatriciad@verizon.net; rhalsey@naicob.org; thpo@wampanoagtribe-nsn.gov; bonney.hartley@mohican-nsn.gov; Brian.Weeden@mwtribe-nsn.gov; leigh-anne@communityactionworks.org; tribalcouncil@chappaquiddickwampanoag.org

From: [A1/B2 ACR EJ Advance Notification](#)
To: [A1/B2 ACR EJ Advance Notification](#)
Cc: [MEPA-EJ \(FEA\)](#)
Bcc: ben@environmentmassachusetts.org; cluppi@cleanwater.org; deb.pasternak@sierraclub.org; elvis@n2nma.org; hclish@outdoors.org; hricci@massaudubon.org; juliablatt@massriversalliance.org; kelly.boling@tpl.org; kerry@msaadapartners.com; ngoodman@environmentalleague.org; pstanton@e4thefuture.org; rob@oceanriver.org; robb@massland.org; sarah@massclimateaction.net; srubin@clf.org; sylvia@communityactionworks.org; tsmookler@uomassaction.org; wvaughan@hcwh.org; tribalcouncil@chappaquiddick-wampanoag.org; thpo@wampanoagtribe-nsn.gov; crwritings@aol.com; john.peters@mass.gov; acw1213@verizon.net; melissa@herringpondtribe.org; rockerpatriciad@verizon.net; rhalsey@naicob.org; thpo@wampanoagtribe-nsn.gov; bonney.hartley@mohican-nsn.gov; Brian.Weeden@mwtribe-nsn.gov; Tyrrell, Michael; info@newenglandA1B2.com; [Portante, Theresa](#); [Shrestha, Privanka](#)
Subject: A1/B2 ACR EJ Advance Notification- MEPA EENF
Date: Tuesday, June 14, 2022 3:35:34 PM
Attachments: [A1-B2 ACR - EJ Screen Form English.pdf](#)
[A1-B2 ACR - EJ Screening Form-Español.pdf](#)

Good afternoon,

On behalf of the New England Power Company (NEP), please find attached the Environmental Justice Screening Form for NEP's A1/B2 Transmission Line Asset Condition Refurbishment Project, located within an existing Right-of Way within Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling, MA. Recipients of this form include organizations on the EJ Reference List provided by the Massachusetts Executive Office of Energy and Environmental Affairs per the Public Involvement Protocol.

If you have additional questions, please contact 844-500-3536 or email us at info@newenglandA1B2.com.

Regards,
A1/B2 ACR Project Team

Phone: 844-500-3536
Email: info@newenglandA1B2.com

From: [BSC Postmaster](#)
To: [A1B2 ACR EJ Advance Notification](#)
Subject: Your message couldn't be delivered
Date: Saturday, June 18, 2022 12:50:06 PM

Logo



Your message couldn't be delivered

The message you sent to tribalcouncil@chappaquiddick-wampanoag.org couldn't be delivered due to: Recipient server unavailable or busy.

Further information

Connection timed out (Connection timed out)

If you sent this message to multiple addresses, you'll receive a notification like this for every one that didn't arrive.

From: [A1B2 ACR EJ Advance Notification](#)
To: tribalcouncil@chappaquiddickwampanoag.org
Subject: FW: A1/B2 ACR EJ Advance Notification- MEPA EENF
Date: Monday, June 20, 2022 9:53:00 AM
Attachments: [A1-B2 ACR - EJ Screen Form English.pdf](#)
[A1-B2 ACR - EJ Screening Form-Español.pdf](#)

Hello,

It appears the email address provided by EEA for your organization was not valid. We received an error message on the delivery. We are forwarding to the email address provided on your webpage to see if this will go through.

Regards,
A1/B2 ACR Project Team

From: A1B2 ACR EJ Advance Notification <A1B2acr@bscgroup.com>
Sent: Tuesday, June 14, 2022 3:49 PM
To: A1B2 ACR EJ Advance Notification <A1B2acr@bscgroup.com>
Cc: leigh-anne@communityactionworks.org
Subject: A1/B2 ACR EJ Advance Notification- MEPA EENF

Good afternoon,

On behalf of the New England Power Company (NEP), please find attached the Environmental Justice Screening Form for NEP's A1/B2 Transmission Line Asset Condition Refurbishment Project, located within an existing Right-of Way within Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling, MA. Recipients of this form include organizations on the EJ Reference List provided by the Massachusetts Executive Office of Energy and Environmental Affairs per the Public Involvement Protocol.

If you have additional questions, please contact 844-500-3536 or email us at info@newenglandA1B2.com.

Regards,
A1/B2 ACR Project Team

Phone: 844-500-3536
Email: info@newenglandA1B2.com

From: [A1/B2 ACR EJ Advance Notification](#)
To: [A1/B2 ACR EJ Advance Notification](#)
Cc: leigh-anne@communityactionworks.org
Subject: A1/B2 ACR EJ Advance Notification- MEPA EENF
Date: Tuesday, June 14, 2022 3:49:14 PM
Attachments: [A1-B2 ACR - EJ Screen Form English.pdf](#)
[A1-B2 ACR - EJ Screening Form-Español.pdf](#)

Good afternoon,

On behalf of the New England Power Company (NEP), please find attached the Environmental Justice Screening Form for NEP's A1/B2 Transmission Line Asset Condition Refurbishment Project, located within an existing Right-of Way within Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling, MA. Recipients of this form include organizations on the EJ Reference List provided by the Massachusetts Executive Office of Energy and Environmental Affairs per the Public Involvement Protocol.

If you have additional questions, please contact 844-500-3536 or email us at info@newenglandA1B2.com.

Regards,
A1/B2 ACR Project Team

Phone: 844-500-3536

Email: info@newenglandA1B2.com

A1/B2 ACR EJ Enforcement History List
Lancaster

Facility	Facility/Individual	City/Town	Program	Penalty Assessed	Street Address	Type of Enforcement	Issued Date
Lancaster: 7131, Block Group 4							
MassDEP public water suppliers	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	09/27/1996
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	ADMINISTRATIVE CONSENT ORDER NO PENALTY	09/20/2004
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	10/21/2004
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	11/27/2006
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	08/26/2009
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	09/22/2009
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	10/28/2010
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	07/22/2011
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	09/12/2011
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	09/28/2012
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	10/09/2013
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	02/21/2014
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	07/10/2014
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	06/27/2014
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	10/29/2014
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	03/09/2015
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	10/05/2015
	LANCASTER WATER DEPARTMENT	LANCASTER	WATER SUPPLY/DRINKING WATER		392 MILL STREET EXT	NOTICE OF NON-COMPLIANCE	01/06/2016
Underground storage tanks (3)	MCI SHIRLEY DEPT OF CORRECTIONS	SHIRLEY	REGULATED ACTIVITY(S)		4-7 HARVARD RD	NOTICE OF NON-COMPLIANCE	07/28/2011
	MCI SHIRLEY DEPT OF CORRECTIONS	SHIRLEY	REGULATED ACTIVITY(S)		4-7 HARVARD RD	NOTICE OF NON-COMPLIANCE	11/16/2011
	MCI SHIRLEY DEPT OF CORRECTIONS	SHIRLEY	REGULATED ACTIVITY(S)		4-7 HARVARD RD	NOTICE OF NON-COMPLIANCE	06/01/2015
	MCI SHIRLEY DEPT OF CORRECTIONS	SHIRLEY	REGULATED ACTIVITY(S)	500	4-7 HARVARD RD	REPORTING PENALTY ASSESSMENT NOTICE	09/22/2015
	MCI SHIRLEY DEPT OF CORRECTIONS	SHIRLEY	REGULATED ACTIVITY(S)		4-7 HARVARD RD	NOTICE OF NON-COMPLIANCE	12/08/2016
	MCI SHIRLEY DEPT OF CORRECTIONS	SHIRLEY	REGULATED ACTIVITY(S)		4-7 HARVARD RD	NOTICE OF NON-COMPLIANCE	01/17/2017
	MCI SHIRLEY DEPT OF CORRECTIONS	SHIRLEY	REGULATED ACTIVITY(S)	500	4-7 HARVARD RD	REPORTING PENALTY ASSESSMENT NOTICE	09/04/2018

A1/B2 ACR EJ Enforcement History
Leominster

Facility	Facility/Individual	City/Town	Program	Penalty Assessed	Street Address	Type of Enforcement	Issued Date
Leominster: 7092.02, Block Group 2							
Underground storage	Speedway 2431	Leominster	Regulated Activity (s)	Notice of non-compliance	680 Central St	Notice of non-compliance	6/7/2011
	Speedway 2431	Leominster	Regulated Activity (s)	Notice of non-compliance	681 Central St	Notice of non-compliance	6/21/2019

A1/B2 ACR EJ Enforcement History
Fitchburg

Facility	Facility/Individual	City/Town	Program	Penalty Assessed	Street Address	Type of Enforcement	Issued Date
Air permit (2); Large quantity toxic user (4)	431 WESTMINSTER ST LLC	FITCHBURG	REGULATED ACTIVITY(S)		431 WESTMINSTER ST	NOTICE OF NON-COMPLIANCE	05/19/2000
	431 WESTMINSTER ST LLC	FITCHBURG	REGULATED ACTIVITY(S)		431 WESTMINSTER ST	NOTICE OF NON-COMPLIANCE	06/14/2001
	431 WESTMINSTER ST LLC	FITCHBURG	REGULATED ACTIVITY(S)		431 WESTMINSTER ST	NOTICE OF NON-COMPLIANCE	11/03/2009
Air permit (2); Large quantity toxic user (4); "Tier II" toxics use reporting facilities (7); EPA facilities (2)	NEWARK AMERICA	FITCHBURG	REGULATED ACTIVITY(S)		100 NEWARK WAY	ADMINISTRATIVE CONSENT ORDER NO PENALTY	11/09/2001
	NEWARK AMERICA	FITCHBURG	REGULATED ACTIVITY(S)	19900	100 NEWARK WAY	ADMINISTRATIVE CONSENT ORDER WITH PENALTY	03/10/2005
	NEWARK AMERICA	FITCHBURG	REGULATED ACTIVITY(S)		100 NEWARK WAY	NOTICE OF NON-COMPLIANCE	06/06/2008
Large quantity toxic user (4); "Tier II" toxics use reporting facilities (7); Underground storage tanks (6); EPA facilities (2)	OMNOVA SOLUTIONS INC	FITCHBURG	REGULATED ACTIVITY(S)	21500	83 119 AUTHORITY DR	ADMINISTRATIVE CONSENT ORDER WITH PENALTY	04/11/2002
	OMNOVA SOLUTIONS INC	FITCHBURG	REGULATED ACTIVITY(S)		83 119 AUTHORITY DR	NOTICE OF NON-COMPLIANCE	10/18/2013
	OMNOVA SOLUTIONS INC	FITCHBURG	REGULATED ACTIVITY(S)		83 119 AUTHORITY DR	NOTICE OF NON-COMPLIANCE	12/23/2014
	OMNOVA SOLUTIONS INC	FITCHBURG	REGULATED ACTIVITY(S)		83 119 AUTHORITY DR	NOTICE OF NON-COMPLIANCE	02/26/2019
	OMNOVA SOLUTIONS INC	FITCHBURG	REGULATED ACTIVITY(S)		83 119 AUTHORITY DR	NOTICE OF NON-COMPLIANCE	01/29/2021
toxic user (4); "Tier II" toxics use reporting	MODU FORM INC	FITCHBURG	REGULATED ACTIVITY(S)	500	172 INDUSTRIAL RD	ADMINISTRATIVE CONSENT ORDER WITH PENALTY	04/01/1996
	MODU FORM INC	FITCHBURG	REGULATED ACTIVITY(S)	9250	172 INDUSTRIAL RD	ADMINISTRATIVE CONSENT ORDER WITH PENALTY	01/28/2000
	MODU FORM INC	FITCHBURG	REGULATED ACTIVITY(S)		172 INDUSTRIAL RD	NOTICE OF NON-COMPLIANCE	03/01/2005
	MODU FORM INC	FITCHBURG	REGULATED ACTIVITY(S)		172 INDUSTRIAL RD	NOTICE OF NON-COMPLIANCE	05/19/2014
"Tier II" toxics use reporting facilities (7)	AVERY DENNISON	FITCHBURG	REGULATED ACTIVITY(S)		224 INDUSTRIAL RD	NOTICE OF NON-COMPLIANCE	12/17/2001
	AVERY DENNISON	FITCHBURG	REGULATED ACTIVITY(S)		224 INDUSTRIAL RD	NOTICE OF NON-COMPLIANCE	01/31/2013
	AVERY DENNISON	FITCHBURG	REGULATED ACTIVITY(S)		224 INDUSTRIAL RD	NOTICE OF NON-COMPLIANCE	11/20/2015
AUL (3); Underground storage tanks (6)	CHEMDESIGN CORP	FITCHBURG	REGULATED ACTIVITY(S)		99 DEVELOPMENT RD	NOTICE OF NON-COMPLIANCE	7/23/2002
	CHEMDESIGN CORP	FITCHBURG	REGULATED ACTIVITY(S)		99 DEVELOPMENT RD	NOTICE OF NON-COMPLIANCE	8/8/2003
	CHEMDESIGN CORP	FITCHBURG	REGULATED ACTIVITY(S)		99 DEVELOPMENT RD	NOTICE OF NON-COMPLIANCE	2/10/2006
	CHEMDESIGN CORP	FITCHBURG	REGULATED ACTIVITY(S)		99 DEVELOPMENT RD	NOTICE OF NON-COMPLIANCE	7/3/2013

A1/B2 ACR EJ Enforcement History
Fitchburg

Underground storage tanks (6)	MONTACHUSETT REGIONAL VOCATIONAL SCHOOL	FITCHBURG	REGULATED ACTIVITY(S)		1050 WESTMINSTER ST	NOTICE OF NON-COMPLIANCE	07/01/2009
	MONTACHUSETT REGIONAL VOCATIONAL SCHOOL	FITCHBURG	REGULATED ACTIVITY(S)	500	1050 WESTMINSTER ST	REPORTING PENALTY ASSESSMENT NOTICE	08/03/2010
	MONTACHUSETT REGIONAL VOCATIONAL SCHOOL	FITCHBURG	REGULATED ACTIVITY(S)		1050 WESTMINSTER ST	NOTICE OF NON-COMPLIANCE	07/27/2016
	MONTACHUSETT REGIONAL VOCATIONAL SCHOOL	FITCHBURG	REGULATED ACTIVITY(S)		1050 WESTMINSTER ST	NOTICE OF NON-COMPLIANCE	11/25/2016
	MONTACHUSETT REGIONAL VOCATIONAL SCHOOL	FITCHBURG	REGULATED ACTIVITY(S)		1050 WESTMINSTER ST	NOTICE OF NON-COMPLIANCE	12/05/2017
	FITCHBURG WASTEWATER WEST PLT	FITCHBURG	REGULATED ACTIVITY(S)		401 PRINCETON RD	NOTICE OF NON-COMPLIANCE	2/3/2011
	FITCHBURG WASTEWATER WEST PLT	FITCHBURG	REGULATED ACTIVITY(S)		401 PRINCETON RD	NOTICE OF NON-COMPLIANCE	5/30/2014
	FITCHBURG WASTEWATER WEST PLT	FITCHBURG	REGULATED ACTIVITY(S)	500	401 PRINCETON RD	PENALTY ASSESSMENT NOTICE	11/7/2014
	CRISTY CORPORATION	FITCHBURG	REGULATED ACTIVITY(S)		260 AUTHORITY DR	NOTICE OF NON-COMPLIANCE	02/18/2011
	BOOSTER PUMP STATION	FITCHBURG	REGULATED ACTIVITY(S)		25 ROYAL PLAZA DR	NOTICE OF NON-COMPLIANCE	02/18/2011
BOOSTER PUMP STATION	FITCHBURG	REGULATED ACTIVITY(S)		25 ROYAL PLAZA DR	NOTICE OF NON-COMPLIANCE	07/28/2014	
BOOSTER PUMP STATION	FITCHBURG	REGULATED ACTIVITY(S)		25 ROYAL PLAZA DR	NOTICE OF NON-COMPLIANCE	07/12/2016	

A1/B2 ACR EJ Enforcement History
Athol

Facility	Facility/Individual	City/Town	Program	Penalty Assessed	Street Address	Type of Enforcement	Issued Date
Athol: 7031, Block Group 1							
Underground storage tanks (2)	GETTY PETROLEUM MARKETING INC	ATHOL	REGULATED ACTIVITY(S)		223 MAIN ST	NOTICE OF NON-COMPLIANCE	08/02/2016
	GETTY PETROLEUM MARKETING INC	ATHOL	REGULATED ACTIVITY(S)		223 MAIN ST	NOTICE OF NON-COMPLIANCE	05/31/2019
	GETTY PETROLEUM MARKETING INC	ATHOL	REGULATED ACTIVITY(S)	500	223 MAIN ST	REPORTING PENALTY ASSESSMENT NOTICE	08/27/2019
	CUMBERLAND FARMS 2143	ATHOL	REGULATED ACTIVITY(S)		297 MAIN ST	NOTICE OF NON-COMPLIANCE	04/10/1997
Athol: 7031, Block Group 2							
Underground storage tanks (1)	GIRARDI DISTRIBUTORS CORP	ATHOL	REGULATED ACTIVITY(S)		5 RAILROAD PL	NOTICE OF NON-COMPLIANCE	02/26/2016
	GIRARDI DISTRIBUTORS CORP	ATHOL	REGULATED ACTIVITY(S)		5 RAILROAD PL	NOTICE OF NON-COMPLIANCE	04/07/2017
	GIRARDI DISTRIBUTORS CORP	ATHOL	REGULATED ACTIVITY(S)		5 RAILROAD PL	NOTICE OF NON-COMPLIANCE	12/21/2020
EPA facilities (2)	PEXCO LLC	ATHOL	REGULATED ACTIVITY(S)	4000	764 SOUTH ATHOL RD	ADMINISTRATIVE CONSENT ORDER WITH PENALTY	08/06/1997
	PEXCO LLC	ATHOL	REGULATED ACTIVITY(S)		764 SOUTH ATHOL RD	NOTICE OF NON-COMPLIANCE	08/25/2004
	PEXCO LLC	ATHOL	REGULATED ACTIVITY(S)		764 SOUTH ATHOL RD	NOTICE OF NON-COMPLIANCE	03/10/2010
Athol: 7032, Block Group 3							
Large quantity generators	SPEEDEE OIL CHANGE & TUNE-UP	ATHOL	REGULATED ACTIVITY(S)		1587 SOUTH MAIN ST	NOTICE OF NON-COMPLIANCE	09/08/2006
	SPEEDEE OIL CHANGE & TUNE-UP	ATHOL	REGULATED ACTIVITY(S)		1587 SOUTH MAIN ST	NOTICE OF NON-COMPLIANCE	11/19/2008
Underground storage tanks (1)	CUMBERLAND FARMS 2468	ATHOL	REGULATED ACTIVITY(S)		109 BROOKSIDE RD	NOTICE OF NON-COMPLIANCE	05/26/2005
Athol: 7033, Block Group 1							
"Tier II" toxics use reporting facilities (3)	ATHOL MEMORIAL HOSPITAL	ATHOL	REGULATED ACTIVITY(S)		2033 MAIN ST	NOTICE OF NON-COMPLIANCE	07/21/2015
Underground storage tanks (1)	PETERBOROUGH OIL COMPANY	ATHOL	REGULATED ACTIVITY(S)		243 MAIN ST	NOTICE OF NON-COMPLIANCE	10/27/2006

A1/B2 ACR EJ Enforcement History List
Gardner

Facility	Facility/Individual	City/Town	Program Gardner: 7075, Block Group 1	Penalty Assessed	Street Address	Type of Enforcement	Issued Date
"Tier II" toxics use reporting facilities (4); Underground storage tanks (1)	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)		242 GREEN ST	NOTICE OF NON-COMPLIANCE	03/21/1997
	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)		242 GREEN ST	NOTICE OF NON-COMPLIANCE	12/21/2001
	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)		242 GREEN ST	NOTICE OF NON-COMPLIANCE	05/22/2017
	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)	500	242 GREEN ST	REPORTING PENALTY ASSESSMENT NOTICE	11/21/2017
	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)		242 GREEN ST	NOTICE OF NON-COMPLIANCE	06/27/2018
	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)		242 GREEN ST	NOTICE OF NON-COMPLIANCE	12/23/2019
	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)	500	242 GREEN ST	REPORTING PENALTY ASSESSMENT NOTICE	09/04/2020
	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)	1000	242 GREEN ST	REPORTING PENALTY ASSESSMENT NOTICE	01/29/2021
	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)		242 GREEN ST	NOTICE OF NON-COMPLIANCE	08/31/2021
	HEYWOOD HOSPITAL	GARDNER	REGULATED ACTIVITY(S)	500	242 GREEN ST	REPORTING PENALTY ASSESSMENT NOTICE	11/24/2021
Wastewater treatment plants (1); "Tier II" toxics use reporting facilities (4); MassDEP public water suppliers (1)	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	ADMINISTRATIVE CONSENT ORDER NO PENALTY	08/20/1996
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	02/15/2000
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	ADMINISTRATIVE CONSENT ORDER NO PENALTY	07/24/1998
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	ADMINISTRATIVE CONSENT ORDER NO PENALTY	09/11/2000
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	UNILATERAL ADMINISTRATIVE ORDER	10/04/2000
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	10/30/2000
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	11/07/2000
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	ADMINISTRATIVE CONSENT ORDER NO PENALTY	12/04/2000
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	04/19/2001
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	05/29/2002
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	01/22/2003
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	ADMINISTRATIVE CONSENT ORDER NO PENALTY	07/25/2003
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	10/12/2004
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	02/17/2006
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	ADMINISTRATIVE CONSENT ORDER NO PENALTY	02/13/2006
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	07/10/2006
	GARDNER WATER DEPARTMENT	GARDNER	WATER SUPPLY/DRINKING WATER		99 HEYWOOD ST	NOTICE OF NON-COMPLIANCE	04/11/2022

A1/B2 ACR EJ Enforcement History List
Gardner

Gardner: 7075, Block Group 2							
Large quantity generator (1); EPA Facilities	VIVITIDE, LLC	GARDNER	REGULATED ACTIVITY(S)	9000	65 ZUB LN	ADMINISTRATIVE CONSENT ORDER WITH PENALTY	09/15/2006
	VIVITIDE, LLC	GARDNER	REGULATED ACTIVITY(S)		65 ZUB LN	NOTICE OF NON-COMPLIANCE	10/18/2013
	VIVITIDE, LLC	GARDNER	REGULATED ACTIVITY(S)		65 ZUB LN	NOTICE OF NON-COMPLIANCE	04/01/2021
Underground storage tanks (1)	NORTH CENTRAL CORRECTIONAL INSTITUTION	GARDNER	REGULATED ACTIVITY(S)		500 COLONY RD	NOTICE OF NON-COMPLIANCE	01/08/1996
	NORTH CENTRAL CORRECTIONAL INSTITUTION	GARDNER	REGULATED ACTIVITY(S)		500 COLONY RD	NOTICE OF NON-COMPLIANCE	05/27/1997
	NORTH CENTRAL CORRECTIONAL INSTITUTION	GARDNER	REGULATED ACTIVITY(S)		500 COLONY RD	NOTICE OF NON-COMPLIANCE	06/30/2006
	NORTH CENTRAL CORRECTIONAL INSTITUTION	GARDNER	REGULATED ACTIVITY(S)		500 COLONY RD	NOTICE OF NON-COMPLIANCE	06/01/2015
	NORTH CENTRAL CORRECTIONAL INSTITUTION	GARDNER	REGULATED ACTIVITY(S)		500 COLONY RD	NOTICE OF NON-COMPLIANCE	03/26/2021
Gardner: 7075, Block Group 3							
Underground storage tanks (2)	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)		56 UNION SQ	NOTICE OF NON-COMPLIANCE	04/27/2006
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)	500	56 UNION SQ	REPORTING PENALTY ASSESSMENT NOTICE	04/26/2007
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)	1000	56 UNION SQ	REPORTING PENALTY ASSESSMENT NOTICE	04/30/2008
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)	1000	56 UNION SQ	REPORTING PENALTY ASSESSMENT NOTICE	04/30/2009
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)		56 UNION SQ	NOTICE OF NON-COMPLIANCE	07/26/2011
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)		56 UNION SQ	NOTICE OF NON-COMPLIANCE	10/31/2013
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)		56 UNION SQ	NOTICE OF NON-COMPLIANCE	06/02/2014
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)	500	56 UNION SQ	REPORTING PENALTY ASSESSMENT NOTICE	08/17/2016
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)		56 UNION SQ	NOTICE OF NON-COMPLIANCE	05/22/2017
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)	500	56 UNION SQ	REPORTING PENALTY ASSESSMENT NOTICE	11/21/2017
	GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)		56 UNION SQ	NOTICE OF NON-COMPLIANCE	06/27/2018
GARDNER STOP & BUY	GARDNER	REGULATED ACTIVITY(S)	500	56 UNION SQ	REPORTING PENALTY ASSESSMENT NOTICE	09/18/2018	

A1B2 ACR EJ Advance Notification

From: A1B2 ACR EJ Advance Notification
Sent: Friday, July 1, 2022 2:34 PM
To: a1b2acr@bscgroup.com
Subject: A1/B2 ACR EJ Advance Notification Reference List- Virtual Meeting Invitation

Hello,

On June 14, 2022, a notice was sent out to the EJ reference list provided by Executive Office of Energy and Environmental Affairs (EEA). As a follow up to the notice, and to enhance the public engagement process, NEP will be holding a public meeting for the entities that received the notice as well as abutters along the ROW located within an Environmental Justice community.

Please join us on July 11th, 2022, from 6-8pm for a virtual meeting to learn about the Project, including a Project overview, anticipated activities and schedule.

We look forward to seeing you!



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Cámara

<http://transperfectww.remotecounsel.com/meetings/ksmTqV09skE/join>

Hola,

El 14 de junio de 2022, se envió un aviso a la lista de referencia de EJ proporcionada por la Oficina Ejecutiva de Energía y Asuntos Ambientales (EEA). Siguiendo al aviso, y para mejorar el proceso de participación pública, NEP llevará a cabo una reunión pública para las entidades que recibieron el aviso, tanto como los que comparten el perímetro del Derecho de paso ubicado dentro de una comunidad de justicia ambiental.

Vengan con nosotros el 11 de julio de 2022, de 6:00 p. m. a 8:00 p. m. a una reunión virtual para conocer el Proyecto, que incluye una descripción general del Proyecto, las actividades anticipadas y el horario del Proyecto.

Estamos comprometidos a brindar un amplio acceso y la oportunidad de mantenerse actualizado sobre este Proyecto. Puede encontrar más información en nuestro sitio web: newenglanda1b2.com o llamando al +1 (844) 500-3536.

¡Esperamos verte!

Regards,
A1/B2 ACR Project Team

Phone: 844-500-3536

Email: info@newenglandA1B2.com