Single Environmental Impact Report

May 2024

Line 313/343/O141/P142 Asset Condition Refurbishment and Access Road Improvement Project

Prepared For:

New England Power Company
170 Data Drive
Waltham, MA 02451

Prepared By:

TRC
63 Marginal Way, 4th Floor
Portland, ME 04101

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APPENDICES

ACRONYM LIST

ACEC	Areas of Critical Environmental Concern
ACR	Asset Condition and Refurbishment
ASAPP	Archaeological Site Avoidance and Protection Plan
AULs	Activity Use Limitation
BFE	Base Flood Elevation
BG	Block Group
BLSF	Bordering Land Subject to Flooding
BMPs	Best Management Practices
BVW	Bordering Vegetated Wetland
CMP	Conservation and Management Permit
CMR	Code of Massachusetts Regulation
Coneco	Coneco Engineers & Scientists, Incorporated
CWA	Clean Water Act
DC	Direct Current
DCR	Department of Conservation and Recreation
DCT	Double Circuit Tower
DGA	Designated Geographic Area
Diesel PM	Diesel Particulate Matter
EENF	Expanded Environmental Notification Form
EFI	Environmental Field Issue
EG-303NE	Environmental Guidance Document: ROW Access, Maintenance and Construction BMPS for New England
EG-501MA	Environmental Guidance Document: National Grid Immediate Spill Response Actions Guidance
EH	Estimated Habitat
EIR	Environmental Impact Report
EJ	Environmental Justice
ENF	Environmental Notification Form
EOEEA	Executive Office of Energy and Environmental Affairs
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
GP	General Permit
GPS	Global Positioning System
HI	Hazard Index
IWQC	Individual Water Quality Certification
kV	kilovolt
LUW	Land Under Water
MA	Massachusetts

MA DPH	Massachusetts Department of Health
MAHW	Mean Annual High Water
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MassGIS	Massachusetts Geographic Information System
MBTA	Massachusetts Bay Transportation Authority
MCP	Massachusetts Contingency Plan
MC-FRM	Massachusetts Coast Flood Risk Model
MEPA	Massachusetts Environmental Policy Act
MEPA EJ Protocol	MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations
MESA	Massachusetts Endangered Species Act
MHC	Massachusetts Historic Commission
MODF	Mineral Oil Dielectric Fluid
NEP	New England Power Company d/b/a National Grid
NESC	National Electrical Safety Code
NFIP	National Flood Insurance Program
NHESP	Natural Heritage and Endangered Species Program
NOI	Notice of Intent
Non-PCB	Non-Polychlorinated Biphenyl
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory
OHM	oil and/or hazardous material
OHWM	Ordinary High-Water Mark
OPGW	Optical Ground Wire
ORW	Outstanding Resource Water
O&M	Operations & Maintenance
PAL	Public Archaeology Laboratory, Inc
PCN	Pre-Construction Notification
PEM	Palustrine Emergent
PFAS	Per- and Poly-fluoroalkyl Substances
PFO	Palustrine Forested
PH	Priority Habitat
PM 2.5	Particulate Matter 2.5
Project or Preferred Alternative	313/343 and P142/O141 ACR and Access Road Improvement Project
PSS	Palustrine Scrub-Shrub
RA	Riverfront Area
RMAT Tool	RMAT Climate Resilience Design Standards Tool
RMP	Risk Management Plan

ROW	Right-of-Way
SEIR	Single Environmental Impact Report
SHMCAP	State Hazard Mitigation and Climate Adaptation Plan
SWPPP	Stormwater Pollution Prevention Plan
the Act	*An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy*
The Company	New England Power Company d/b/a National Grid
TMPs	Traffic Management Plans
TOY	Time-Of-Year
TRC	TRC Environmental Corporation
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish & Wildlife Service
USGS	United States Geographic Survey
WPA	Wetlands Protection Act
WsPA	Watershed Protection Act

Index of Scope Items

SEIR Scope Requirements

EENF CERT SECTION	COMMENT	SEIR SECTION
General	The Single EIR should follow Section 11.07 of the MEPA regulations for outline and content and provide the information and analyses required in this Scope. It should clearly demonstrate that the Proponent has sought to avoid, minimize, and mitigate Damage to the Environment to the maximum extent practicable.	All
Project Description and Permitting	The Single EIR should identify any changes to the project since the filing of the EENF. It should identify and describe State, federal, and local permitting and review requirements associated with the project and provide an update on the status of each of these pending actions. The Single EIR should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project's consistency with those standards.	Section 1.2 and Section 12.0
Project Description and Permitting	The Single EIR should include detailed site plans for existing and post-development conditions at a legible scale. Plans should clearly identify buildings, interior and exterior public areas, impervious areas, transportation improvements, and stormwater and utility infrastructure. The Single EIR should provide detailed plans, sections, and elevations to accurately depict existing and proposed conditions, including proposed above- and below-ground structures, on- and-off-site open space, and resiliency and other mitigation measures.	Figure 2, Appendix A
Project Description and Permitting	The Single EIR should provide additional information regarding the proposed ACR activities. Specifically, the Single EIR should confirm the number of structures to replaced, clarify the number of structures (poles) that will be replaced with direct embed foundations as opposed to drilled pier foundations, and clarify whether any existing structures will be removed/new structures are proposed to be installed. It should identify the total length and area of access road improvements (distinguishing between Type S and R roads). It should update quantified temporary and permanent environmental impacts (including to specific resource types) to the extent these impacts have changed since the filing of the EENF.	Section 1.2, Section 2.2, and Section 2.3
Project Description and Permitting	The information and analyses identified in this Scope should be addressed within the main body of the Single EIR and not in appendices. In general, appendices should be used only to provide raw data, such as drainage calculations, traffic counts, capacity analyses and energy modelling, that is otherwise adequately summarized with text, tables, and figures within the main body of the Single EIR. Information provided in appendices should be indexed with page numbers and separated by tabs, or, if provided in electronic format, include links to individual sections. Any references in the	All

SEIR Scope Requirements

EENF CERT SECTION	COMMENT	SEIR SECTION
	Single EIR to materials provided in an appendix should include specific page numbers to facilitate review.	
Alternatives Analysis	As discussed above, the EENF proposes up to 306.2 acres of permanent land alteration associated with widened access roads and permanent new work pads around the refurbished transmission structures. The Single EIR should describe the process by which the dimensions of work pads or access roads were determined. It should address why these particular lines were chosen for refurbishment, including whether specific instances of power outages or reliability issues led to the project and whether this ACR project is part of a master plan developed by NEP for this region or the state. It should demonstrate that the Preferred Alternative reduces environmental impacts to the maximum extent feasible.	Section 2.5.4 and Section 3.0
Environmental Justice	The Single EIR should include a separate section on "Environmental Justice" that describes a public involvement plan to meaningfully engage EJ populations located within the DGA in decision-making for the project. It should identify the criterion associated with the designation of the 21 EJ populations that cross the project corridor. The Single EIR should contain a full description of measures the Proponent intends to undertake to promote public involvement by such EJ populations during the remainder of the MEPA review process including a discussion of any of the best practices listed in the MEPA EJ Public Involvement Protocol that will be employed. It should describe any outreach that will be conducted as part of local review processes. The Single EIR should include an update on any outreach conducted since the filing of the EENF and a description of any changes made to the project (including mitigation measures) in response to this outreach. The Single EIR, or a summary thereof, should be distributed to the "EJ Reference List," with any updates to the list provided by the MEPA Office upon request.	Section 9.1
Environmental Justice	As discussed below, the Single EIR should update analysis with regard to minimization measures relative to rare species habitat, DCR land/state forests, watershed land, and ACECs where recreational and drinking water sources available to the public may be implicated. The Single EIR should further describe stormwater controls and discuss whether any flooding risks may be anticipated to surrounding areas. The Single EIR should describe whether significant vegetation removal will occur near EJ neighborhoods, and whether this may exacerbate extreme heat risks under future climate conditions.	Section 4.2, Section 4.3, Section 6.3, and Section 9.3
Public Health	The Single EIR should include a separate section on "Public Health," and discuss any known or reasonably foreseeable public health consequences that may result from the environmental impacts of the project. Particular focus should be given to any impacts that may materially exacerbate "vulnerable health EJ criteria," in accordance with the MEPA Interim Protocol for	Section 9.2

SEIR Scope Requirements

EENF CERT SECTION	COMMENT	SEIR SECTION
	Analysis of EJ Impacts. In addition, other publicly available data, including through the DPH EJ Tool, should be surveyed to assess the public health conditions in the immediate vicinity of the project site, in accordance with 301 CMR 11.07(6)(g)10. Any project impacts that could materially exacerbate such conditions should be analyzed.	
Public Health	The Single EIR should provide additional analysis of impacts on EJ populations consistent with the MEPA Interim Protocol including fully analyzing the data available in the DPH tool at the municipal and census tract level. The Single EIR should provide the number and type of pollution source broken down by municipality in which the EJ populations are located. To the extent any required Permits for the project contain performance standards intended to protect public health, the Single EIR should contain specific discussion of such standards and how the project intends to meet or exceed them.	Section 9.2
Public Health	The Single EIR should provide additional information regarding measures to mitigate any potential impacts to EJ populations during the construction period. Specifically, the Single EIR should provide more detail regarding construction period activities, including the estimated number of construction period truck trips that are anticipated for the project, and the potential for increased emissions within EJ populations near and within the ROW.	Section 9.3.2 and Section 11.0
Land Alteration and Stormwater	The Single EIR should provide an update of total of land alteration, distinguishing between temporary and permanent impacts, and clarify the amount of tree clearing required. It should clarify the other land cover types (scrub shrub, grassland, etc.) associated with other types of land alteration, and quantify the acreage of each land cover type. It should clarify the area of alteration associated with widening along Type S roads and identify the typical width of existing access roads to be widened. The Single EIR should identify the acreage of alteration that will occur outside of the ROW and/or easements currently held by the NEP and, if such alteration is proposed, evaluate measures to minimize this impact to the maximum extent feasible.	Section 4.2
Land Alteration and Stormwater	As noted above, the Single EIR should supplement the Alternatives Analysis to further explain how the size of work pads and access roads was determined, and to explain what alternatives were explored to minimize land and resource area impacts. The Single EIR should identify the minimum area of work pads necessary to facilitate ongoing maintenance as opposed to project construction and identify the total area of work pads prior to/during construction and following restoration activities. It should clearly show the area and location of work pads on site plans, as well as the areas to be restored following project construction. The Single EIR should demonstrate that the size of work pads has been minimized to the maximum extent possible, particularly in environmentally sensitive areas (NHESP habitat, ACECs, Article 97 Land, wetland resource areas,	Section 2.5.4, Section 3.0, Section 4.2 and Section 4.3

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EENF CERT SECTION	COMMENT	SEIR SECTION
	etc.). The Proponent should confirm whether new access roads and work pads shown within existing active agricultural areas on the access plans will be permanent or temporary, as requested by MassDEP.	
Land Alteration and Stormwater	The Single EIR should clarify whether access through DCR land is proposed only in areas with recorded easements or fee ownership (or whether new access points outside easement areas, such as in off-ROW areas, are proposed). The Single EIR should clarify the total extent of "off-ROW" access proposed by the project, whether these are proposed in resource areas or DCR land, and what impacts and mitigation are provided for such access.	Section 4.2.3
Land Alteration and Stormwater	The EENF states that the project has been designed to comply with the Massachusetts Stormwater Management Standards (SMS) to the maximum extent possible as a limited and redevelopment project. The Single EIR should demonstrate that all redeveloped area meets the SMS to the maximum extent practicable following the criteria in Volume 2, Chapter 3 of the Massachusetts Stormwater Handbook, as requested by MassDEP. Comments from MassDEP note that although work pads, new sections of access road, and widening of access roads will not result in significant forest clearing, many acres of shrub/herbaceous vegetation will be permanently converted to gravel, potentially resulting in an increase in the temperature of surface water runoff, reduction in wildlife habitat, and a decrease in carbon sequestration. The Single EIR should identify the total existing and proposed gravel areas, including access roads and work pads.	Section 4.1, Section 4.2 and Section 11.3
Article 97	The Proponent is expected to consult with DCR's ACEC program regarding the project's compliance with the intent of the ACEC designations and measures to reduce impacts to ACECs. The Single EIR should provide an update on this consultation and identify any changes made in response. The Single EIR should identify the permanent and temporary impacts to each ACEC within the project corridor and identify what these impacts are associated with. The Single EIR should evaluate measures to reduce impacts to ACECs, and identify any reductions made since the EENF. The EENF does not discuss the project's compliance with the intent of each ACEC designation; this information should be provided in the Single EIR.	Section 4.1.2 and Section 4.2.2
Wetlands and Waterways	The Single EIR should provide updated estimates of permanent and temporary impacts to wetland resource area as appropriate and clarify what activities these impacts are associated with. It should clarify impacts to existing vegetated and non-vegetated resource areas and clarify the amount of cut and fill proposed within BLSF, as well as proposed compensatory flood storage. I refer the Proponent to comments from MassDEP, which note that work pads, new access roads, and expanded road widths should be considered new degraded areas. The Single EIR should identify the new creation of degraded areas within each resource area. The Single EIR should evaluate	Section 5.2

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EENF CERT SECTION	COMMENT	SEIR SECTION
	offsite mitigation and/or restoration of onsite degraded areas to compensate for conversion of vegetated areas to degraded areas, as requested in comments from MassDEP. Coldwater Fisheries should be delineated and shown on the Access Plans, and the Single EIR should include an evaluation of potential impacts to Coldwater Fisheries and other Critical Areas.	
Wetlands and Waterways	The Single EIR should verify whether a 401 Water Quality Variance will be required in addition to the 401 WQC for work resulting in the discharge of dredged or fill material into wetlands within Outstanding Resources Waters ("ORWs") (314 CMR 9.06(3)) within the Wachusett Reservoir watershed in Boylston, West Boylston, and Sterling, or within 400 feet of the Wachusett Reservoir, a Class A surface water (314 CMR 9.06(4)), as requested in comments from MassDEP. MassDEP notes that, as tributaries to the Wachusett Reservoir, all wetlands within the easement between the Boylston/West Boylston town line and Kendall Hill Road in Sterling are ORWs. The Single EIR should update the permanent and temporary alteration to ORW as necessary.	Section 5.2.3, Section 5.2.4 and Section 12.6.2
Wetlands and Waterways	The Single EIR should identify if any access roadways are proposed within new locations and whether any existing access roadways will be abandoned or restored to vegetated conditions; discuss if the upgraded access roads will result in increased use of the easement by unauthorized off-road vehicles, leading to additional damage to wetland resource areas and buffer zones; and describe long-term maintenance requirements for the work pads. To the extent they are available, the Single EIR should include Wildlife Habitat Evaluations for impacts to Bank, BVW, LUW, BLSF, and Riverfront Area. If culvert replacements or extensions are required due to the widening of access roads, the Single EIR should demonstrate that the crossings meet the Massachusetts Stream Crossing Standards to the maximum extent practicable according to the criteria found in 310 CMR 10.53(8), as noted in comments from MassDEP.	Section 2.5.3, Section 5.2.1, and Section 5.2.6
Wetlands and Waterways	Comments from MassDEP note that the Draft Section 61 Findings included in the EENF only commit to mitigation measures already required to achieve compliance with WPA and WQC regulations. The Proponent is expected to expand upon the proposed mitigation measures to include mitigation for the large areas of vegetation and soil that will be replaced with gravel throughout the project, and specifically within BLSF, Riverfront Area, and Buffer Zones, as requested in comments from MassDEP. As noted above, the Proponent should evaluate minimizing permanent impacts to these areas through the reduction in width of access roads/area of permanent work pads to the maximum extent feasible.	Section 13.1
Wetlands and Waterways	The Single EIR should address comments from MassDEP-WRP regarding potential c.91 impacts. Specifically, the Single EIR should include detailed plans that include the High Water Mark, which is the c.91 jurisdictional boundary for the navigable portions of non-tidal rivers and streams. The	Section 5.2.5 and Section 12.5

SEIR Scope Requirements

EENF CERT SECTION	COMMENT	SEIR SECTION
	Proponent is also encouraged to consult with MassDEP-WRP for a full review of the scope of work as it relates to c.91 licensing. An update on any such consultation should be provided in the Single EIR. The Single EIR should identify whether any Minor Modification to existing c.91 Licenses/Permits will be required for the project.	
Drinking Water	The Proponent is expected to consult with DCR regarding the request for a Temporary Access Permit from the DCR Wachusett Reservoir Regional Office. An update on this coordination should be provided in the Single EIR. The Proponent should evaluate measure to further reduce permanent impacts to WsPA Areas. The Proponent should explore options to block certain access areas from use by All-Terrain Vehicles and motorized dirt bikes, as requested by DCR.	Section 4.2, Section 4.3, and Section 12.4
Rare Species	The EENF indicates that NEP will continue to consult with NHESP, and that a Massachusetts MESA checklist is being prepared and will be implemented to avoid, minimize, and mitigate project related impacts in accordance with the O&M Plan. The Single EIR should provide an update on consultation with NHESP, and address whether a determination has been made as to whether the project will involve a "Take" and in turn a CMP. The Single EIR should include a draft MESA checklist to the extent it is available. It should update the calculations of impacts to Priority and Estimated Habitat (separately) and distinguish between temporary and permanent impacts to these resources. It should continue to evaluate measures to reduce impacts to rare species habitat.	Section 6.0
Historical and Archaeological Resources	The EENF indicates that the Proponent will file a survey report with the MHC in the first half of 2024 and will be developing measures to minimize or mitigate adverse effects to historic and archaeological resources. The details and results of this survey should be provided in the Single EIR to the extent they are available. The Single EIR should provide an update on coordination with MHC.	Section 7.0
Climate Change	The Single EIR should identify the areas of the project corridor that are located within a 100-year floodplain, the applicable FEMA Zone, base flood elevations (BFEs), and the proposed permanent and temporary work in these areas. While the EENF describes the general resiliency benefits of the project achieved by updating aging infrastructure to current design standards, it does not specifically address the design recommendations from the MA Resilience Design Tool. The Single EIR should identify the specific portions of the project corridor flagged as having "Moderate" to "High" to (future) riverine flooding as indicated by the MA Resilience Design Tool in the revised output report. It should include a narrative explaining whether proposed infrastructure improvements will make the project assets more resilient to risks associated with riverine flooding from a 50-year (2%) storm event estimated as of 2070. The Single EIR should discuss the extent to which existing electrical lines are exposed to riverine flooding, and what measures the Proponent is	Section 10.0

SEIR Scope Requirements

EENF CERT SECTION	COMMENT	SEIR SECTION
	taking to improve asset resiliency over a longer-term horizon. In particular, the Single EIR should discuss whether new foundations are being elevated above any defined BFEs or other similar water/flood elevation measure to ensure that the structures are resilient to future flooding risks. This value can be determined either through use of the Tier 2/3 methodologies provided by the MA Resilience Design Tool, or reasonably estimated through comparison with the current 100-year BFEs determined for the project site or adjacent locations. Flood insurance studies performed by FEMA can also be consulted as a resource (with higher storm events chosen as a proxy for future climate conditions).	
Climate Change	Where impervious/semi-pervious area is created and stormwater management is required, the Single EIR should address the recommendations from the MA Resilience Design Tool, including whether the stormwater management designs will be resilient to future climate conditions including the 50-year (2% chance) storm as of 2070 based on the relevant output report from the Tool. As noted, the Single EIR should clarify the total extent of tree clearing and indicate whether significant vegetation removal is proposed near EJ areas, or “Hot Spots” as identified by the RMAT data dashboard. The Single EIR should indicate whether stormwater design will exacerbate any flooding into any nearby residential areas.	Section 4.2.5 and Section 10.0
Construction Period and Hazardous Waste	The Single EIR should confirm that the project will include a spills contingency plan that addresses prevention and management of potential releases of oil and/or hazardous materials from pre and post-construction activities. It should confirm that this plan will be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential releases. The Single EIR should identify the terms of the AUL that intersects the project corridor and the project’s consistency with the AUL. The Single EIR should address comments from MassDEP, which state that if dewatering activities are to occur at a site with contaminated groundwater, or in proximity to contaminated groundwater where dewatering can draw in the contamination, a plan must be in place to properly manage the groundwater and ensure site conditions are not exacerbated by these activities. MassDEP further states that, due to the detection of per- and poly-fluoroalkyl substances (PFAS) in groundwater near the Spectacle Pond municipal drinking water well on Spectacle Pond Road (RTN 2-20964) and the tire recycling facility at 43 Willow Road (RTN 2-17951) in Ayer, evaluation of PFAS, and other site related contaminants as necessary, should be conducted if dewatering is performed in areas that could be affected by releases from these sites. The Single EIR should clarify whether dewatering is proposed in these areas.	Section 8.0

SEIR Scope Requirements

EENF CERT SECTION	COMMENT	SEIR SECTION
Mitigation and Draft Section 61 Findings	The Single EIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize, and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations. As noted above, the Proponent is expected to expand upon the mitigation measures included in the Draft Section 61 Findings provided in the EENF. The Single EIR should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (land alteration, ACEC, traffic, wetlands, rare species, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project. The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase.	Section 13.0
Responses to Comments	The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. In order to ensure that the issues raised by commenters are addressed, the Single EIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. This directive is not intended, and shall not be construed, to enlarge the scope of the Single EIR beyond what has been expressly identified in this certificate.	Section 14.0
Circulation	The Proponent should circulate the Single EIR to each Person or Agency who previously commented on the EENF, each Agency from which the Project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope. The Proponent may circulate copies of the Single EIR to commenters other than Agencies in a digital format (e.g., CD-ROM, USB drive) or post to an online website. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer to be distributed upon request on a first come, first served basis.	N/A

1.0 Introduction

New England Power Company d/b/a National Grid (NEP or The Company) is proposing to perform access road improvements and create permanent work pads within an existing Right-of-Way (ROW) that serves several electric overhead transmission and sub-transmission lines in Central Massachusetts (MA). In addition to providing long term and reliable access, the access road improvements and work pad construction will be utilized to immediately support required transmission line maintenance otherwise known as asset condition and refurbishment (ACR) of the existing 345 kilovolt (kV) electric overhead transmission lines designated as the 313/343 Lines and the 115 kV electric overhead transmission lines designated as the O141/P142 Lines. The Line 313/343/O141/P142 ACR and Access Road Improvement Project (Project) presented in this filing includes this joint ROW improvement and transmission line work as a single, complete project.

The 313/343 Lines are located within an existing utility ROW which begins at Sandy Pond Substation in Ayer, MA, extends through the cities and/or towns of Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton and terminates at the Millbury #3 Substation in Millbury, MA. The O141/P142 Lines are located mostly within the same ROW starting at Pratt's Junction Substation in Sterling, MA, extending through the cities and/or towns of Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton and ending at the Millbury #2 Substation in Millbury, MA with two spurs that terminate at the Bloomingdale and the Nashua Street Substations in Worcester, MA (Appendix A, Figure 1). The primary ROW is approximately 35.7 miles in length and is shared by ten (10) transmission and sub transmission lines of various voltages though not all of the transmission lines traverse the full length of the ROW. The Bloomingdale Tap on the O141/P142 is 3.5 miles while the Nashua Street Tap is approximately 5 miles.

The O141/P142 Lines were originally constructed in 1929 and later rebuilt in 1989 and are supported primarily by a double circuit tower configuration. The 313/343 Lines were originally built in 1969 and are supported primarily by a combination of wood and steel pole structures.

The O141/P142 Lines and the 313/343 Lines will require the replacement of shield wire, replacement of select structures and other maintenance to be performed on some of the remaining structures, such as the replacement of insulators and/or crossarms. The shield wire replacement, structure replacements and structure maintenance work is typically considered Routine Maintenance under 301 Code of Massachusetts Regulation (CMR) 11.01 (2)(b)(3) when it is completed on its own; however, because the Project also includes upgraded access roads and the construction of permanent work pads that independently trigger Massachusetts Environmental Policy Act (MEPA) review and the ACR work cannot be completed without the access improvements, the Project team has presented all environmental impacts and mitigation measures for all proposed work as a single, complete project. No significant tree-clearing or expansion of the ROW is proposed as part of the Project.

The road improvements will reinforce the existing road network to access the transmission lines located in this ROW for the immediate ACR projects but also for future operation and maintenance. The ACR work will address immediate reliability concerns, bring the infrastructure to current safety codes and will extend the life of the assets. Together, these improvements demonstrate the steps the Company is taking to promote climate change adaptation and

resiliency measures. As discussed further in the SEIR, the Project will result in a more climate-ready and resilient transmission system that can withstand more extreme weather events.

TRC Environmental (TRC) has prepared this Single Environmental Impact Report (SEIR) for compliance with the MEPA regulations found at 301 CMR 11.00 in response to the Expanded Environmental Notification Form (EENF) that NEP filed in December 2023.

1.1 Summary of MEPA Process

1.1.1 MEPA Thresholds

This Project is undergoing MEPA review because it requires multiple state permits and exceeds MEPA thresholds identified in Table 1-1 below.

Table 1-1: MEPA Thresholds

MEPA Environmental Impact Report (EIR) Thresholds	MEPA Environmental Notification Form (ENF) Thresholds
EIR: Land: Direct alteration of 25 or more acres of land unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices. *(301 CMR 11.03(1)(b)(1))*	**ENF: Rare Species:** Taking of an endangered or threatened species or species of special concern, provided that the Project site is two or more acres and includes an area mapped as a Priority Site of Rare Species Habitats and Exemplary Natural Communities. *(301 CMR 11.03(2)(b)(2)). (Potential-ongoing consultations.)*
EIR: Environmental Justice (EJ): The Secretary shall require an EIR for any Project that is located within a Designated Geographic Area around an Environmental Justice Population. *(301 CMR 11.06(7)(b)*	**ENF: Areas of Critical Environmental Concern (ACEC):** Any Project of ½ or more acres within a designated ACEC, unless the Project consists solely of one single family dwelling. *(301 CMR 11.03(11)(b))*
EIR: Wetlands, Waterways & Tidelands: Alteration of one or more acres of bordering vegetated wetland. (301 CMR 11.03(3)(a)(1)(a)	**ENF: Wetlands, Waterways & Tidelands:** Alteration of 5,000 square feet of bordering vegetated wetlands (301 CMR 11.03(3)(b)(1)(d)) and 500 or more linear feet of inland bank (301 CMR 11.03(3)(b)(1)(c))

This SEIR is being filed in accordance with 301 CMR 11.07. This narrative provides responses to scope items and comments identified in the EENF Certificate provided to NEP by the MEPA Office on January 30, 2024 (Appendix B).

1.1.2 MEPA Filing History

NEP filed the EENF on December 15, 2023, and was published in the Environmental Monitor on December 22, 2023. Following review by the assigned MEPA Analyst, the MEPA site walk was conducted on January 17, 2024, and those in attendance included staff from the Town of Shrewsbury and the Massachusetts Department of Conservation and Recreation (DCR). The remote public information session was on January 17, 2024 and those in attendance included the Shrewsbury Conservation Agent, a staff member from the City of Worcester and a staff member

from DCR. The EENF Certificate, received on January 30, 2024, granted the request for an SEIR and provide the scope for the SEIR.

1.2 Changes Since Filing of the EENF

Several changes to the Project approach have occurred since the filing the EENF. Some of the changes were the result of multiple field reviews that were conducted with the Project team. Other changes are being proposed in response to comments NEP received on the EENF and agency consultations. One change in scope related to structure replacements in wetlands will lead to a very small permanent wetland impact (244-feet). However, overall, the proposed changes have led to a reduction in environmental impacts.

1.2.1 Reduction of Impacts

As a result of multiple field reviews, NEP has reduced impacts from what was identified in the EENF filing in December 2023 by:

- Grading only work pads necessary to conduct the ACR work and future operation and maintenance of the transmission lines. The Access Plans (Figure 2, Appendix A) have been updated to distinguish work pads that will be graded versus those that will not be graded. Work pads that are not graded will only require temporary impacts. This reduced the acreage of permanent impacts from work pads by 121 acres;
- Shifting work pads outside of wetlands where possible (approximately 15 work pads); however, due to the need to add a new alternate access across a large wetland between Structure 180 and 181 (Line 313/343), the amount of temporary wetland impact remains essentially the same.
- Utilize pre-existing roads where possible;
- Based on additional field review, many proposed access roads along the ROW were re-classified from a Type S or R road to a road that does not require any improvement at all. This reduced impacts from access road improvements by 16 acres and approximately 8 miles.
- All pull pads will now be temporary resulting in a reduction of 20 acres of permanent impact.
- All work pads and pull pads in Bordering Land Subject to Flooding (BLSF) will be temporary, resulting in a reduction of 3.2 acres of permanent impact.
- No permanent work pads will be constructed on agricultural fields.
- Since many of the work pads in Riverfront Area (RA), Areas of Critical Environmental Concern (ACEC), Watershed Protection Act (WsPA) lands, Article 97 lands and Natural Heritage and Endangered Species Program (NHESP) Priority Habitat (PH) are now temporary, permanent impacts to these resources have been reduced as outlined in Table 1-2 below.

Table 1-2 identifies the impact reductions between the EENF and the SEIR filing:

Table 1-2: Comparison of Impacts Between EENF and SEIR

Resource Areas & Buffer Zones	Permanent Impacts in EENF (acres)	Temporary Impacts in EENF (acres)	Permanent SEIR Impacts (acres)	Temporary SEIR Impacts (acres)
Land Alteration	306.2	19.7	146.8	144.0
Bordering Vegetated Wetland (BVW)	0	19.7	0.005 (244 square feet)	20.3
100-foot Buffer	93.2	0	36.8	54.8
Land Under Water (LUW)	0	1.4	0	1.0
Inland Bank (linear feet)	0	3,054 linear feet	0	3,502 linear feet
RA	20.1	4.6	8.3	15.5
BLSF	4.7	3.6	1.5	7.8
ACEC	54.7	3.3	36.2	21.4
NHESP Rare Species Habitat	115.0	9.4	37.9	27.9
DCR WsPA Zones	20.0	2.6	6.4	14.3

1.2.2 Road Types

The EENF identified two types of access road improvements and/or refreshment that would be utilized for this Project. Since the EENF filing, NEP has determined that all existing access roads requiring improvements will now be identified as Type S only. This change was made to take a more conservative approach, considering construction is sequenced over 18 to 24 months and road conditions may change in that timeframe. Although some of the roads may only require minor improvements at this time, when future phases of the 313/343 ACR work are conducted several years from now, these roads may require more substantial improvements. Access roads that do not require improvements have also been identified. Locations of access road improvements are included on the Access Plans (Figure 2, Appendix A).

1.2.3 Agency Consultations

NEP has conducted additional agency consultations and proposed additional mitigation measures since filing the EENF. NEP has consulted with staff from DCR, the ACEC program and the NHESP. Consultations included informal e-mail correspondence and calls with these agencies, as well as more formal presentations. On March 26, 2024, NEP met with multiple staff from DCR including the ACEC program lead, to present the Project and seek agency comment. On March 27, 2024, NEP reviewed a draft Massachusetts Endangered Species Act (MESA) checklist with NHESP staff and discussed steps for further studies and additional practices to be considered to reduce impacts.

1.3 Permit List with Current Status of Each Application

NEP is in the process of obtaining all approvals and permits required by federal, state, and local agencies for the Project. Table 1-3 below summarizes the permit approvals required or potentially required for the Project.

Table 1-3: Permits Required

Agency	Permit/Review/Approval	Status
Federal		
United States Army Corps of Engineers (USACE)	Section 404 Pre-Construction Notification (PCN) Permit and consultations under Section 106 of National Historic Preservation Act and Section 7 of the Endangered Species Act	Anticipate filing Q2 2024
United States Environmental Protection Agency (USEPA)	National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges and Construction Dewatering Activities/Stormwater Pollution Prevention Plan (SWPPP)	Anticipate filing Q3 2024
State		
Massachusetts Department of Environmental Protection (MassDEP)	Section 401 Individual Water Quality Certification (IWQC)	Anticipate filing Q2 2024
NHESP	MESA Checklist Conservation and Management Permit (CMP) (if needed)	Draft Checklist Submitted to NHESP. Final Checklist in Progress
DCR	Construction Access Permit WsPA Permit	Anticipate filing Q2 2024
Massachusetts Department of Transportation (MassDOT)	State Highway Access Permit Temporary Access Permit and/or Utility Access Permit	Anticipate filing Q3 2024
Local		
Conservation Commissions in Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury	Order of Conditions per the Massachusetts Wetlands Protection Act (WPA)[1] and local bylaws.	Anticipate filing Q3 2024

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

2.0 Project Description

NEP is proposing to construct access road improvements and grading to create permanent work pads in a shared ROW that includes several transmission lines. The access improvements will create short- and long-term access to the transmission lines that will enable NEP to inspect, maintain, repair and otherwise undertake the activities necessary to safely maintain the reliability of the transmission lines. The access road improvements will be used immediately to support the O141/P142 and Line 313/343 ACR work. Together, the access road improvements and ACR work comprise the Project. The total length and areas involved with each component of the Project is identified in Table 2-1 below. The full scope of work associated with the Project is depicted on the Access Plans (Figure 2, Appendix A):

Table 2-1: Summary of Project Components

Project Component	Total Length/Area
Total Length of Type S Roads	43 miles
Total Area of Work Pads	186.8 acres
Total Area of Pull Pads	20.0 acres

2.1 Project Purpose and Need

The primary purpose of the Project is to ensure safe access for operation and maintenance and/or emergency needs of the transmission lines in the ROW. In addition, the Project will improve overall site conditions along access roads in the ROW. The Project will also improve transmission system infrastructure and comply with comprehensive regional plans for improving electric transmission reliability in New England. NEP will replace transmission line assets that are in poor condition, including pole replacements, upgrades to insulator assemblies and upgrades to grounding. Structure replacements include changing poles from wood to steel, which provides greater resiliency to climate change. The Project will provide safe access and level work areas that will streamline work on future operations and maintenance activities thus resulting in a more climate-ready and resilient transmission system that can withstand more extreme weather conditions. No significant tree-clearing or expansion of the ROW is proposed as part of the Project.

2.2 Line 313/343 ACR Work

This work involves replacing the existing copperweld shield wires on the 313/343, 345kV transmission line with a fiber optical ground wire (OPGW). In addition, select structures will be replaced with maintenance work on some of the remaining structures, such as the replacement of insulators and/or crossarms. The replacement structures will be more resilient because NEP is transitioning from a wood to steel design. Three structures in wetlands will also be changing from smaller direct embed foundations to larger drilled pier foundations. This work will be completed in two phases with the more time-sensitive work completed first. The purpose of the Line 313/343 project is to improve the long-term reliability of the line and add fiber optic communications between the Millbury No. 3 and Sandy Pond Substations.

2.2.1 *Updated Description of ACR Work*

The ACR Project scope includes the replacement of:

- Seven wood H-Frame deadend structures;
- 27 wood 3-Pole structures;
- 32 wood H-Frame suspension structures
- One broken guy on Structure 88 with one insulated guy
- Insulator assemblies on 12 structures
    - Two steel monopole deadend structures
    - Five wood restrained suspension structures
    - Four steel restrained suspension structures
    - One wood deadend structure
- 5,000 feet of conductor (Structure 282 to 285)
- One broken guy on Structure 205 with one insulated guy

With a total of:

- 33 steel H-Frame deadend structures on steel reinforced concrete drilled pier foundations; and
- 35 steel directly embedded H-Frame restrained suspension structures.

The Project scope includes the maintenance of:

- Structure #172 (shieldwire through installation of clamp star)
- Structure #278 (repair static wire and mounting bracket attachment hardware)
- Structure #59 (damaged weld)
- Grounding hardware for seven structures
    - Two steel lattice tower deadend structures
    - One steel 3-Pole deadend structure
    - One steel H-Frame suspension structure
    - One wood 3-Pole suspension structure
    - Two wood H-Frame suspension structure
    - 30 steel monopole structures
    - Six steel monopole deadend structures

2.3 O141/P142 ACR Work

The O141/P142 ACR work involves replacing the existing copperweld shield wires on the P142/O141, 115 kV transmission line with a fiber OPGW. In addition, select structures will be replaced with maintenance work on some of the remaining structures, such as the replacement of insulators and/or crossarms.

2.3.1 *Updated Description of ACR Work*

The Project scope includes the following structure work:

- Remove one wood H-Frame structure (Structure #2 on loop through Greendale and Nashua Street);
- Remove two lattice suspension structures (O-141S Structure #185S and P-142S Structure #185);
- Remove one lattice structure (Structure #2);
- Remove four steel structures (Structures #87, #132, #133);
- Install two steel pole H-Frame structures;
- Install two steel H-Frame suspension structures;
- Install four steel suspension structures;
- Replace insulation at 179 double circuit structures and 200 single circuit structures; and
- Replace any preformed deadened grips.

The Project scope includes the following foundation work:

- Install three concrete drilled pier foundations for three steel deadend structures (Structures #22, #83, #86)
- Install two concrete drilled pier foundations for one steel H-Frame deadend structure (Structure #2)
- Install four concrete drilled pier foundations for two steel pole H-Frame structures;
- Install four concrete drilled pier foundations for two steel H-Frame suspension structures
- Install four concrete drilled pier foundations for four steel davit arm suspension structures.

The Project scope includes the following shield wire/OPGW work:

- Install a slice box at Sterling Municipal (Structure #140), P142S Mainline Structure #157, and P142S Bloomingdale Tap Structure #2.

2.4 Proposed Road Types

The EENF identified two types of access road improvements and/or refreshment that would be utilized for this Project. Since the EENF filing, NEP has determined that all roads will now be identified as Type S only.

Information on Type S access road improvements and an explanation for their need is provided in Table 2-2 below. The description and locations are also included on the Access Plans (Figure 2, Appendix A).

Table 2-2: Description of Type S Road Improvements

Road Type	Description
Type S – Widen and Refresh Existing	This road type involves restorative widening and refreshing an existing stable access road. Road may be widened to a maximum of 16 feet via the addition of stone and may involve minor grading and scraping. Depending on the level of the existing pathway, different methods will be utilized to refresh. Install erosion and stormwater controls by creating stormwater BMPs and drainage features.

2.4.1 Stormwater Information

Access road improvements are considered redevelopment under the Massachusetts Stormwater Standards and therefore, the work will comply with the Stormwater Standards to the maximum extent practicable. Stormwater conveyance Best Management Practices (BMPs), including swales, check dams, water bars, and plunge pools, will be primarily used to reduce the potential for washout of the gravel access areas.

Permanent work pads will be finished with a crushed stone and or gravel. Work pads in ACECs, RA, WsPA lands, Article 97 lands and NHESP PH will be topped with loam and then seeded as needed to restore vegetation. The Project will not add impervious area and is not anticipated to have a significant impact to hydrology along the ROW. Rather, by controlling the run-on to and runoff from the constructed access and work pads and allowing it to recharge into the ROW ground surface in a controlled manner, the Project is meeting the intent of the Massachusetts Stormwater Handbook and the provisions of 310 CMR 10.05(6)(k) through (q). NEP will prepare a Stormwater Checklist for inclusion in the Notice of Intent (NOI) filings for the Project.

2.5 Project Construction and Sequence

The following sections describe the primary construction tasks and the general construction sequence for the Project. While work will generally follow the sequence listed below, some work may occur simultaneously at various locations along the ROW.

2.5.1 Environmental Resource Area Flagging and ROW Mowing

Prior to the start of construction, wetland and stream delineation flagging will be refreshed as needed so contractors are aware of the limits of jurisdictional resource areas.

Once water resources are protected and clearly marked along the ROW, vegetation removal and mowing activities will begin to provide safe vehicular access to existing structure locations, to facilitate safe equipment passage and to provide a safe work site for personnel within the ROW. Vegetation will be mowed or cut close to the ground, leaving stumps and routes in place to reduce soil disturbance and erosion. In locations where grading is required, stumps will be removed.

2.5.2 Installation of BMP's

Access to the ROW will primarily be through existing access routes held in fee or easement by NEP. Select BMPs found in National Grid's *Environmental Guidance Document EG-303NE, ROW Access, Maintenance and Construction BMPS for New England* (EG-303NE) (Appendix C) including soil erosion and sediment controls will be installed to minimize any potential impacts to regulated resources in the Project ROW. At a minimum, weekly inspections will be conducted to inspect the BMP's and determine any potential issues. Inspection reports, which include Photographic Logs, will be submitted throughout construction and until final stabilization has been achieved.

2.5.3 Access Road Improvements

The proposed access road improvement and work pad construction activities will be performed utilizing various construction equipment including, but not limited to graders, bulldozers, dump trucks, etc. Type S roads will involve widening and adding clean crushed stone and gravel to the existing access road base. Select Type S roads will require minimal grading and scraping of soils to be suitable for construction vehicles and personnel. Roadside swales will be restored or constructed where needed to capture stormwater runoff. To prevent unauthorized access, additional obstructions (boulders) may be placed in key areas with prior landowner approval.

The clean crushed stone and gravel used on the roads will create a road that allows water to infiltrate the roadway. The roadway will be shaped to allow, where needed, drainage to grass swales which will promote the decrease in velocity of stormwater runoff. Stormwater BMPs such as swales, stone check dams, water bars, or other similar measures will be installed as necessary based on field conditions. These measures are intended to reduce adverse impacts from stormwater flows, maintain the longevity of the roads, and reduce overall maintenance needs.

There are no permanent access roads proposed through wetlands. Instead, NEP will use construction mats in wetland areas to minimize wetland disturbance and compaction of soils. Construction mats are typically comprised of wooden beams, bolted together, and are typically 4 feet wide by 16 feet long. They are laid temporarily on top of the ground and vegetation. These mats allow heavy machines and vehicles to cross sensitive areas without damaging the soil or roots of vegetation and are also placed in a manner that do not affect the flow of water in streams. These mats will be removed when construction is completed, and the wetlands will be restored. Temporary construction mat access roads will be removed once construction has been completed.

There are no new access roads proposed for the Project.

2.5.4 Construct Work Pads

The Project aims to upgrade the existing access road network and create level work pads to support the upcoming transmission line maintenance projects and to support future operation and maintenance and emergency response. The transmission line maintenance associated with the ACR work will ensure a safe and reliable transmission supply to customers. These upgrades will extend the life of the lines.

Work pads will be constructed at all structures in advance of the ACR work. Work pads are necessary to accommodate the removal of existing structures, installation of new or replacement structures and their accessory features. Work pads also include pull pads that are constructed in between select spans to stage equipment that is used to pull the new OPGW into place. Work pads and pull pads are mostly located within the existing ROW, with the exception of a few that are partially or just outside of the ROW (landowner approval will be obtained prior to construction start). If the ground in the proposed work pad area is level, minimal grading is required before the topsoil is stripped and a layer of crushed stone is installed. If the proposed work pad area has significant topographic changes, then grading is first required to create a level work area before crushed stone is added. See the Access Plans (Figure 2, Appendix A) for the locations of the work pads and pull pads along the ROW.

The size of the work pads and pull pads is dependent on a number of factors: the width of the ROW, the amount of grading required, and the amount of space needed for the construction equipment at that given location. In addition, NEP will perform some of the maintenance of the transmission line using "live-line" construction methods. These methods will require some flexibility in work pad set-up in order to complete work safely and account for site constraints associated with adjacent transmission line structures and associated guy wires. Therefore, NEP may require reconfiguration of the work pad in order to complete the work. NEP will reconfigure work pads to further minimize impacts wherever possible.

Please see Table 2-3 below for NEP's standard work pad areas for line projects which are driven by the transmission voltage and electrical clearance and safety requirements. On Line 313/343, the standard work pad dimensions are 125-feet by 125-feet where space allows. On the O141/P142, the standard work pad dimensions are 100-feet by 100-feet where space allows.

Table 2-3: NEP's Standard Work Pad Areas for Line Projects

Voltage (kV)	<35.5	69 / 115	230	345	450 Direct Current (DC)
Minimum Area Required to Safely Execute Pole Work (in feet)**					
Structure Work Areas					
Single Pole, Direct Embed – Culvert	50 x 50	100 x 100	125 x 125	125 x 125	Not Applicable (N/A)
Single Pole, Caisson	50 x 50	100 x 100	125 x 125	125 x 125	N/A
H-Frame – Direct Embed – Culverts	75 x 75	125 x 125	150 x 150	150 x 150	150 x 150
H-Frame - Caissons	75 x 75	125 x 125	150 x 150	150 x 150	150 x 150
Convert H-Frame to Monopole	75 x 75	125 x 125	150 x 150	150 x 150	N/A
Special Circumstances*	TBD	TBD	TBD	TBD	TBD
Conductor/SW/OPGW Pull Sites	100 x 150	100 x 150	100 x 150	100 x 150	TBD

Table 2-3: NEP's Standard Work Pad Areas for Line Projects

Voltage (kV)	<35.5	69 / 115	230	345	450 Direct Current (DC)
Minimum Area Required to Safely Execute Pole Work (in feet)**					
(located at least 3:1 away from tower)					
Guard Structures	15 x 40	20 x 60	30 x 70	30 x 70	30 x 70
Notes: *Replacing double circuit towers (DCT) with either separate structures or different structure types may require special work pad sizes to be determined during project planning/development. **Area must be graded/filled to less than 5 percent grade.					

NEP will avoid and minimize wetland resource area impacts to the extent practical by using existing upland areas on the ROW for initial staging of equipment and materials. There will be no permanent work pads constructed in wetlands. Construction mats will instead be used in wetland areas to minimize wetland disturbance and compaction of soils. See the Access Plans (Figure 2, Appendix A) for the construction mat locations. Construction mats will be removed following construction allowing these areas to be restored to the existing condition.

No permanent work pads are proposed in agricultural lands or floodplain. Work pads in RA, ACECs, WsPA lands, Article 97 lands and NHESP PH will be fully revegetated and restored.

2.5.5 Structure Replacement and Other Utility Maintenance Work

Structures will be replaced in-kind with direct embed foundations or drilled pier foundations. The direct-embed structures are typically installed using a truck-mounted, auger style drill to bore a hole for the new foundations. A vertical culvert is installed, the new pole is placed inside the culvert and then backfilled and compacted with soil material displaced from the boring of each hole. The area of disturbance is limited to the ground surface that is excavated, which is typically no more than 5-square feet per pole.

Concrete foundations for steel structures will typically be drilled piers (also known as drilled caissons), 9 to 10 feet in diameter and 15 to 30 feet in depth, depending on the height and load conditions for the structure. Caissons will be constructed by drilling a vertical shaft, installing a steel reinforcing cage, placing steel anchor bolts, pouring concrete, and backfilling as needed. Structures will be lifted by a crane and placed onto the anchor bolts.

After the replacement structures are installed, the existing structures are removed and the lines are transferred over to the new structures.

Other maintenance work includes insulator replacements, installation of signage and replacement of shield wire with OPGW. This overhead line work does not involve any ground disturbance and is typically completed by crews accessing the hardware on the structures using bucket trucks staged on the work pads. Grounding repairs may be required at existing or new structure locations. Grounding includes the installation of a rod or wire attached to the base of the structure

and embedded into the ground to provide a safe and stable path for excess electricity to escape. Grounding will occur within the limit of disturbance for the structure excavation.

2.5.6 Restoration of ROW

Following construction, restoration of all work areas will take place. Debris, or other project waste, will be removed and disposed of. All exposed soils will be temporarily stabilized with straw or equivalent. Disturbed areas will then be seeded with an appropriate seed mixture, should vegetation not grow back naturally after a growing season. All BMP's will be removed following the stabilization of disturbed areas. In certain locations, where authorized by property owners, gates and roadblocks may be installed to restrict access onto the ROW by unauthorized persons or vehicles.

Regulated environmental resource areas that are temporarily or permanently disturbed by construction will be restored in accordance with applicable permit conditions. Work pads proposed in sensitive areas, such as RA, ACECs, WsPA lands, Article 97 lands, and NHESP habitat, will be loamed and seeded as needed to allow for full revegetation and restoration while still allowing for future operation and maintenance accessibility.

3.0 Alternatives Analysis

NEP identified and evaluated a variety of potential alternatives for meeting the Project need to ensure operational reliability, safety, and electricity supply for the service area. The Project aims to upgrade the existing access road network and create level work pads to support the upcoming transmission line maintenance projects. The transmission line maintenance is being advanced to ensure a safe and reliable transmission supply to customers. The proposed work will extend the life of the lines. NEP analyzed these potential alternatives by considering their ability to meet the identified need and weighting reliability, environmental factors, and cost considerations.

The alternatives identified and evaluated include: (1) a no-build alternative; (2) permit each ACR project separately alternative; (3) limited design alternative; and (4) the preferred alternative (the Project).

3.1 No-Build Alternative

Under the no-build alternative, no access road improvements or permanent work pads would be constructed in order to facilitate safe vehicular and equipment passage, and to provide safe work sites for personnel in order to construct the 313/343 and the O141/P142 line maintenance projects. This alternative does not improve site conditions along the corridor and does not allow easy access to all of the structures for future operation and maintenance or emergency repairs along the corridor. Additionally, the no-build alternative would not replace the 68 identified structures at high risk of failure nor repair the identified maintenance needs on the transmission lines that will ensure electric reliability.

The No-Build Alternative would not meet the relevant reliability needs and therefore was not considered further.

3.2 Permitting and Upgrading Roads for Each ACR Project Separately

Permitting and constructing each ACR project separately would likely have more environmental impacts and add unnecessary cost to customers than the preferred alternative due to mobilizing heavy equipment and construction crews to the site multiple times. While the impacts from the structure replacements, transmission line upgrades, and work pads for the ACR work would generally remain the same, this alternative requires multiple mobilizations as opposed to bundling the civil component (road improvements and graded work pads) into one effort. Permitting and upgrading roads for each ACR Project separately would increase earth disturbance as upgrades would be made to portions of access routes that are immediately adjacent to each transmission lines (O141/P142 and Line 313/343) within the ROW. This would substantially increase access road disturbance and would cause more environmental impact with the additional routes requiring improvement. Permitting each ACR project separately would also unnecessarily increase costs to customers and would require multiple filings to federal, state and local agencies. The Preferred Alternative avoids these added costs and administrative burdens.

Permitting and upgrading roads separately for each ACR Project would ultimately result in increased environmental impacts, costs and administrative burdens and therefore was dismissed.

3.3 Limited Design Alternative

This alternative includes limiting the design of the Project to address only the most critical asset related issues including structure repairs deemed critical or selective road repairs. This alternative would initially result in almost no permanent impacts with primarily temporary impacts to the ROW but would require returning repeatedly to complete the less critical line and structure maintenance and improvement activities on the access roads. In addition, it does not improve existing site conditions along the corridor from deteriorating access roads. This alternative does not solve the ultimate Project need to improve the existing access roads for safe equipment passage, to provide safe work pads at Project sites for personnel within the ROW, to maintain access for future operation and maintenance and/or emergency needs.

In order to perform the construction of the ACR work, concrete trucks, large cranes and support vehicles are required to access a majority of the structures. Performing this work on steep slopes and/or significant grade changes is simply unsafe under a power outage and because portions of this work may require construction to be performed during live-line events, the need to have a stable, level workspace when performing the work is only reinforced. Given the safety needs, this alternative was not selected.

As a result, this alternative did not meet the identified Project need and therefore was dismissed. The Company conducted additional site reviews after filing the EENF to develop new means and methods of work pad construction and restoration that were incorporated into the Preferred Alternative. These proposed methods reduced the overall Project impacts.

3.4 Preferred Alternative (the Project)

The Preferred Alternative meets the identified needs by improving existing access roads along approximately 35.7 miles of transmission line ROW that is shared with 10 transmission and sub transmission lines of various voltages. It allows for the installation of permanent work pads around existing structures so that critical maintenance of these transmission lines and structures can be constructed safely and efficiently while also allowing flexibility to perform construction during live line events. The Project will improve access for future operation and maintenance and/or emergency repairs. This alternative demonstrates the steps the Company has taken to promote climate change adaptation and resilience in which supports the Commonwealth's climate change goals. The Project incorporates NEP's mitigation measures by:

- Only grading work pad that have slopes that are not currently safe for construction activities.
- Restoring work pads (i.e. with loam and seeding as needed) within sensitive resource areas (ACECs, Article 97 lands, NHESP habitat, RA and WsPA lands) while still allowing for future operation and maintenance accessibility.
- Utilize temporary work pads wherever feasible.
- All pull pads will be temporary.
- Many work pads in RA will now be temporary.
- All work pads in floodplain will be temporary.

The Project also offers cost efficiencies to our customers, reduces disruption to adjacent abutters, and minimizes regulatory and administrative burden on the federal, state, and local regulatory bodies. Only the full-scale ACR work, and access road improvements scope meets all of the identified needs.

3.5 Conclusion

As described above, the No-Build Alternative was rejected because it did not address the Project need. Permitting and upgrading roads for each ACR project separately will increase environmental impacts, pass on unnecessary cost to customers and undue burden on regulatory bodies. A limited scope alternative does not address safety and access concerns and would be more impactful through routinely crossing resource areas to complete less critical maintenance needs. Therefore, the Project will best address the identified purpose and need.

4.0 Land Use

This section provides a description of existing land use along the Project ROW, as well as potential impacts and proposed mitigation measures associated with land alteration during construction.

4.1 Updated Existing Conditions

Existing land use conditions within the ROW limits were assessed based on publicly available Massachusetts Geographic Information System (MassGIS) land use data layers. The land uses are listed in Table 4-1 below and are consistent with what NEP observed during numerous site visits to plan for the Project. Some sections of the ROW are densely developed, urban and suburban areas, while other sections are more rural agricultural lands and open space. The land area of the Project ROW is approximately 1,202.5 acres.

Table 4-1: Land Use

Land Use	Acres
Agriculture	27.2
Commercial	24.7
Forest	12.4
Industrial	212.5
Mixed use, other	11.8
Mixed use, primarily commercial	7.9
Mixed use, primarily residential	41.8
Open land	327.1
Recreation	21.1
Residential - multi-family	31.7
Residential - other	30.0
Residential - single family	93.5
Right-of-way	103.0
Tax exempt	166.4
Unknown	55.5
Water	35.9
TOTAL	1202.5

4.1.1 Article 97 / Public Open Space Lands

Permanently protected Article 97 lands that intersect the Project ROW are listed in Table 4-2 below. These protected lands include state lands, town parks and private lands with conservation restrictions that provide recreation, conservation, and habitat protection. State lands also include

the protected parcels around the Wachusett Reservoir, which are discussed below. The Project will be limited to NEP's fee owned land or easements and does not include any new or expanded off-ROW access through Article 97 lands. There are no tree removals associated with this work.

Table 4-2: Open Space

Site Name	Owner	Municipality
None	City of Leominster	Lancaster
None	City of Leominster	Leominster
88 Anna Street	City of Worcester	Worcester
Autumn Ridge Farm CR	Smith Richard R and Beverly B and Steven H	Ayer
Ayer Game Farm	Department of Fish and Game	Ayer
Ayer Water Supply Land	Town of Ayer	Ayer
Colton Conservation Area	Town of Millbury	Millbury
Cook Conservation Area	Town of Lancaster	Lancaster
Dallas Street	City of Worcester	Worcester
East Lake Waushacum Overlook Conservation Area	Town of Sterling	Sterling
East Millbury Conservation Area	Town of Millbury	Millbury
Lake Avenue Conservation Area	City of Worcester	Worcester
Lake Street Park	Town of Shrewsbury	Shrewsbury
Lancaster-Blood Town Forest	Town of Lancaster	Lancaster
Maple Avenue Conservation Area	Town of Shrewsbury	Shrewsbury
Mulpus Brook WMA	Department of Fish and Game	Shirley
Newton Pond	Town of Shrewsbury	Boylston
Newton Pond	Town of Shrewsbury	Shrewsbury
Oak Street Water Basin Water Supply Land	Town of Shrewsbury	Shrewsbury
Perkins Farm	City of Worcester	Worcester
Philbin APR	Philbin Elizabeth W	Sterling
Pine Meadow Conservation Area	Town of Ayer	Ayer
Pond View Estates CR	Robert M Hicks Inc Trustee of Pond View Estates Homeowners Trust	Ayer
Pratts Junction Road Conservation Area	Town of Sterling	Sterling
Rich Tree Farm	Town of Shirley	Shirley
Squannacook River WCE	Farnsworth James K	Shirley

Table 4-2: Open Space

Site Name	Owner	Municipality
Squannacook River WCE	Shirley Rod and Gun Club	Shirley
Wachusett Reservoir Watershed	DCR - Division of Water Supply Protection	Sterling
Wachusett Reservoir Watershed	DCR - Division of Water Supply Protection	West boylston

4.1.2 Areas of Critical Environmental Concern

NEP is proposing to make approximately 10-miles of road improvements to existing access roads on ACEC lands. ACECs are places in Massachusetts that receive special recognition because of the quality, uniqueness and significance of their natural and cultural resources. The Project crosses over three ACECs, which include the Squannassit, Petapawag, and Central Nashua River Valley ACECs.

The Squannassit ACEC is significant due to its diverse medium and high-yield aquifers, twenty-three state listed species, and twenty-three NHESP Certified Vernal Pools.

The Petapawag ACEC contains notable archaeological and historical resources, sixteen state listed species, and community drinking water resources.

The Central Nashua River Valley ACEC roughly 12,900 acres, contains substantial floodplain and aquafers, riparian and upland wildlife, and rare species habitat.

4.1.3 DCR Land

The ROW traverses DCR lands in the Wachusett Reservoir watershed in West Boylston and Sterling. The Wachusett Reservoir is an unfiltered source of high-quality water for the Massachusetts Water Resources Authority water supply system. The 65-billion-gallon reservoir covers 108 square miles with 37 miles of shoreline. Recreational activities are regulated and limited to protect 3 million people's drinking water. NEP holds a real estate license to perform routine maintenance within these DCR properties. The Project has been designed to utilize existing access within NEP easements. NEP will submit an application for a Construction and Access Permit for work necessary to maintain the existing access roads.

4.1.4 DCR Watershed Protection Act Areas

In addition to DCR lands, the ROW also traverses lands that are subject to regulation under the WsPA, which is administered by DCR. The WsPA regulates land use and activities within critical areas of the Wachusett Reservoir watershed for the purpose of protecting the source supply of drinking water that is treated and distributed by the MA Water Resources Authority. Two types of land areas within the Wachusett Reservoir are regulated under the WsPA:

- **Primary Protection Zones**: Areas within 400 feet of the reservoir and 200 feet of tributaries and surface waters.

- **Secondary Protection Zones**: Areas between 200 and 400 feet of tributaries and surface waters, and on land within floodplains, over some aquifers, and within wetlands.

These areas are protected under the WsPA because land alteration within these zones has the potential to impact water quality within the Wachusett Reservoir. The Project will include work within both the Primary and Secondary Protection Zones. In addition, both the O141/P142 and Line 313/343 cross over the Wachusett Reservoir, so line work will take place within 400-feet of either side of the reservoir. However, there is no work proposed within any wetland or waterbody within 400-feet of Wachusett Reservoir. Lands that are subject to the WsPA and lands that are owned by the Commonwealth of Massachusetts are depicted on Figure 3 (Appendix A).

4.2 Updated Impacts to Land

Project impacts associated with all of the various land cover types that occur within the ROW are provided in Table 4-3 below.

Table 4-3: Permanent and Temporary Impacts by Land Cover Type.

Land Cover Type	Permanent Impact (acres)	Temporary Impact (acres)
Barren Land (Rock/Sand/Clay)	2.97	2.61
Deciduous Forest	58.71	42.78
Developed, High Intensity	0.36	4.03
Developed, Low Intensity	15.75	15.23
Developed, Medium Intensity	3.56	8.09
Developed, Open Space	12.27	11.03
Emergent Herbaceous Wetlands	0.16	0.60
Evergreen Forest	5.41	4.16
Freshwater Emergent Wetland (NWI)	0.67	3.70
Freshwater Forested/Shrub Wetland (NWI)	0.33	2.28
Freshwater Pond (NWI)	-	0.37
Grassland/Herbaceous	4.72	3.19
Lake (NWI)	0.01	0.04

Table 4-3: Permanent and Temporary Impacts by Land Cover Type.

Land Cover Type	Permanent Impact (acres)	Temporary Impact (acres)
Mixed Forest	15.54	9.70
Open Water	0.01	0.53
Pasture/Hay	16.71	14.70
Riverine (NWI)	0.29	1.07
Shrub/Scrub	8.35	9.37
Woody Wetlands	3.87	7.66

4.2.1 Article 97 / Public Open Space Lands

Land alteration on protected public open spaces will occur within the existing NEP ROWs and off-ROW access roads that are authorized under existing easements. Work pads that fall within other resource areas (ACEC, NHESP, WsPA & RA) on Article 97 land will be revegetated with loam and seed as needed and stabilized following construction. There will be no permanent work pads constructed on agricultural fields or lands subject to an Agricultural Preservation Restriction.

There are several other areas where off-ROW access routes traverse protected open space, particularly around the Wachusett Reservoir, but these routes are along well-established approved access roads that require minimal maintenance within their existing footprint.

4.2.2 Areas of Critical Environmental Concern

On March 26, 2024, NEP met with multiple staff from DCR including the ACEC program lead, to present the Project and seek agency comment. NEP and DCR discussed a variety of topics, and requested an alternatives analysis specific to ACEC, a break-down of the impacts within resource areas, and mitigation offered. NEP provided a memo to DCR on April 30, 2024, regarding the ACEC related questions that came up in the meeting. NEP will continue to consult with DCR to develop a mitigation package for work in ACEC's and plans to schedule a site visit with the ACEC program lead, as requested, in the upcoming months.

The Project will result in approximately 36.2 acres of permanent impact to ACECs from road improvements and work pad construction, the majority of which are in upland areas. NEP is aiming to minimize impacts to ACECs to the maximum extent feasible and plans to continue to consult with the ACEC Program for guidance on how to best achieve that. However, current proposed impacts are discussed in Section 4.3 and are summarized in Tables 4-4 and 4-5 below.

Table 4-4: Total ACEC Impacts

ACEC Land	Permanent Impact (acres)	Temporary Impact (acres)
Squannassit	11.8	4.9
Petapawag	16.0	7.7
Central Nashua River Valley	8.5	8.8
Total Impact	**36.2**	**21.4**

As discussed in Section 2.5.4, NEP has standard work pad areas based on line voltage. The work pads are the source of most of the impacts listed in Table 4-5. While NEP is continuing to work to minimize impacts within ACEC to the greatest extent possible, the impacts laid out in this section are unavoidable to carry out the structure replacements driven by the need to replace deteriorating existing assets.

To mitigate impacts to ACEC where grading of work pads is proposed, NEP will either create a timber matted work pad or restore all work pads with loam and seed as needed at the end of construction so that vegetation is restored. This will allow for full restoration while still allowing for future operation and maintenance accessibility.

Table 4-5: ACEC Impact Breakdown by Resource Areas

ACEC Land	Permanent Impact to BVW (acres)	Temporary Impact to BVW (acres)	Permanent Impact to RA (acres)	Temporary Impact to RA (acres)	Permanent Impact to BLSF (acres)	Temporary Impact to BLSF (acres)
Squannassit	0	0.30	0.73	0.74	0.39	0.79
Petapawag	0	1.93	0.52	0.20	0.38	1.51
Central Nashua River Valley	0	0.86	1.27	0.81	0.01	0.21
Total Impact	**0**	**3.10**	**2.52**	**1.75**	**0.77**	**2.51**

4.2.3 DCR Land

NEP held a virtual pre-filing meeting with DCR on April 3, 2023, to introduce the Project to DCR staff from the main Boston office and local office at the Wachusett Reservoir. NEP held another meeting after filing the EENF with staff members from DCR on March 26, 2024. At the meeting DCR requested an off-ROW Access Road Table (see Table 4-6 below), a figure depicting DCR Lands and WsPA Lands, and more information on ATV access. See Figure 3 (Appendix A) for the locations of the DCR Lands within the Project Area. It is expected that coordination with DCR will continue throughout Q4 2024 through construction.

Table 4-6: DCR Off-ROW Access Routes

Near Structure/s	Line	Description of Work
68	P142N/O141N	Type-S Road
67	P142N/O141N	Type-S Road
67	P142N/O141N	Type-S Road
66	P142N/O141N	Type-S Road
153	343	Type-S Road

Off-ROW road maintenance will occur on existing access roads only in the Wachusett Reservoir watershed in West Boylston and Sterling, MA. In addition, permanent work pads will be constructed on lands owned by DCR within the existing ROW and only where grading is necessary. The temporary impacts result from matting and pull pads. NEP will continue to consult with DCR on avoidance and minimization opportunities and appropriate mitigation measures. Potential impacts will be minimized to the maximum extent feasible and are discussed in Section 4.3 and summarized in Table 4-7 below.

Table 4-7: DCR Land Impacts

DCR Lands by Town	Permanent Impact (acres)	Temporary Impact (acres)
West Boylston	7.9	13.50
Sterling	1.5	5.38
Total Permanent Impact	**9.4**	**18.9**

4.2.4 DCR Watershed Protection Act Areas

A total of 6.4 acres will be permanently impacted as a result of Type S Road improvements and work pad construction in the Primary and Secondary Protection Zones that are regulated under the WsPA. Impacts have been minimized to the maximum extent feasible as discussed in Section 4.3 and are summarized in Table 4-8 below. As mitigation, all work pads in WsPA areas will be

restored with the application of loam and seed as needed to restore vegetation post-construction. The temporary impacts result from matting in roads, pull pads, and work pads. NEP plans to consult with DCR's Division of Water Supply Protection regarding these impacts to determine any additional appropriate mitigation and minimization measures.

Table 4-8: Watershed Protection Zone Impacts

Watershed Protection Zone	Permanent Impact (acres)	Temporary Impact (acres)
Primary Protection Zone	3.0	9.38
Secondary Protection Act Zone	3.4	4.92
Total Permanent Impact	**6.4**	**14.3**

4.2.5 Vegetation Removal

While the Project primarily utilizes existing ROW, there are two locations along the ROW that will require minimal tree removal. Tree-removal will occur outside Article 97 lands and in uplands only. The locations are provided below:

- In Grafton, by the Wyman-Gordon facilities, there will be 0.25-acres of tree removal (Appendix A, Sheet 6).
- In Worcester, there will be approximately 0.1 acre of tree and brush removal (Appendix A, Sheet 72).

Please note that the existing access road system is being improved and is not currently vegetated and has a solid gravel base at the surface. Otherwise, all other areas within the ROW are assumed to be vegetated. No new access roads are proposed.

4.3 Mitigation for Land Alteration

NEP designed the Project to minimize impacts to the land within and adjacent to the Project ROW. The Project does not require any expansion of the existing ROW and only requires very limited tree removal along the Bloomingdale Tap to provide access along an active railroad line and for proposed pull pad locations. Proposed access road improvements will occur almost entirely along existing access roads or cart paths, which limits the need to clear and grade new areas within the ROW. Off-ROW access routes are used in locations where NEP has existing rights when they provide more feasible routes that avoid environmental resources or areas that would require grading. Proposed access road upgrades have been designed to be the minimum width needed to safely allow vehicle access. Subject to landowner approval, additional obstructions such as boulders will be added next to gates at select locations to reduce unauthorized access.

Permanent work pads will only be graded where necessary to allow for a safe and level work area. Once the roads and permanent work pads have been constructed, adjacent side slopes and roadside shoulders will be seeded as necessary and allowed to revegetate. Additional restoration efforts will be made to mitigate impact caused from the work pads. These measures include loaming and seeding over the work pads as needed to restore vegetation.

NEP will obtain and comply with all Federal, State, and Local approvals prior to construction start including submitting a Notice of Intent to the United States Environmental Protection Agency (USEPA) under the National Pollutant Discharge Elimination System (NPDES) Stormwater Construction General Permit for Stormwater Discharge from Construction Activities. As required under this program, a construction Stormwater Pollution Prevention Plan (SWPPP) will be developed to ensure that BMPs are implemented during construction to address potential impacts. The SWPPP will describe the proposed work stormwater controls to prevent sedimentation and erosion impacts, as appropriate, spill prevention and response measures, and inspection practices. NEP will follow all Company Environmental Policies and Procedures, including *ROW Access, Maintenance and Construction BMP's* (EG-303NE) (Appendix C).

NEP will ensure that all Project activities are overseen by an Environmental Monitor, a qualified environmental professional designated by NEP who can monitor on-site construction conditions in relation to permit and regulatory requirements. Additionally, NEP's contractor will designate a Construction Supervisor who will be responsible for conducting daily inspections during construction and will address potential environmental issues (i.e., erosion and sedimentation). The Construction Supervisor will be on-site to perform the required daily inspections and has "stop work" authority if necessary due to an observed or reported infraction of the standards and procedures.

The Environmental Monitor will provide documentation identifying deficiencies of sediment and erosion control measures to the Construction Supervisor for implementation of corrective measures. Prior to construction, all construction personnel are required to attend an Environmental Field Issue (EFI) Training, where they will be briefed on the Project's environmental issues and permit obligations to ensure compliance with environmental permit requirements. Field staff will also be trained to recognize and respond to changing field conditions as they relate to protecting sensitive areas, wetland resource areas and preventing sedimentation and stormwater runoff. Regular progress meetings will be held to reinforce contractor's awareness of these issues.

5.0 Wetlands and Waterways

This Project ROW traverses numerous wetlands, streams, rivers, and waterbodies. In addition, several field-verified vernal pools occur within the ROW limits. These resource areas are protected under local wetland, state, and federal regulations.

The following sections describe the existing wetland and waterbody resource areas in the Project area, updated impacts to these resource areas and impact avoidance and minimization strategies that will be implemented during construction.

5.1 Updated Existing Conditions

The description of existing wetlands and waterbodies with the ROW was developed from desktop review and field delineation. Wetlands in the ROW include a mix of marshes, shrub swamps and wet meadows. The ROW is traversed by streams with varying flow regimes including ephemeral, intermittent, and perennial rivers as well as lakes ponds.

5.1.1 Wetland and Stream Delineation Methodology

TRC wetland scientists originally conducted wetland, waterbody, and vernal pool surveys during the 2020 field season. The entire corridor was reviewed and refreshed for wetlands, waterbodies, and vernal pools again during the 2023 field season. Prior to heading into the field, TRC reviewed the following desktop data sources to determine the general location and extent of mapped wetlands and vernal pools in the Project ROW.

- United States Geographic Survey (USGS) Topographic Maps
- USGS Color Ortho Imagery
- United States Fish & Wildlife Service (USFWS) National Wetlands Inventory (NWI) MassGIS Datalayer
- MassGIS Massachusetts Department of Environmental Protection (MassDEP) Wetlands 1:12,000 Datalayer
- MassGIS 2023 NHESP PH of Rare Species
- MassGIS 2023 NHESP Estimated Habitats (EH) of Rare Wildlife
- MassGIS NHESP Certified Vernal Pools
- MassGIS NHESP Potential Vernal Pools
- MassGIS Federal Emergency Management Agency (FEMA) Q3 Flood Datalayer

5.1.1.1 Waterbody Delineation Methodology

Streams, rivers, lakes, and pond features within the Project area were identified by the presence of an Ordinary High-Water Mark (OHWM), which is the line established by the fluctuations of water (33 CFR 328.3). The OHWM line is indicated by physical characteristics, which can include: a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other characteristics of the surrounding areas. For streams six feet or more in width, each stream bank was delineated with

blue flagging. For smaller streams, the stream centerline is delineated with notes for the width. Flags were located with a handheld Global Positioning System (GPS) unit with sub-meter accuracy.

5.1.1.2 Wetland Delineation Methodologies

The delineation of wetlands was conducted in accordance with criteria set forth in the 1987 Army Corps Manual, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE, 2012) (Supplement), and the *Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands* (September 2022) (the MassDEP Handbook).

The three-parameter approach to identify and delineate wetlands presented in the 1987 Manual and the Supplement requires that, except for atypical and disturbed situations, wetlands possess hydrophytic vegetation, hydric soils, and wetland hydrology. A two-parameter approach that considers only vegetation and hydrology indicators is presented in the MassDEP Handbook. Per the MassDEP Handbook, hydric soil is included as evidence of wetland hydrology.

Wetland boundary flags were located with a handheld GPS unit with sub-meter accuracy. Delineated resources were classified in accordance with the system presented in *The Classification of Wetlands and Deepwater Habitats of the United States, Second Edition* (Federal Geographic Data Committee, 2013).

5.1.2 Wetland Delineation Results

TRC identified 225 wetlands within the Project ROW during the September 2020 resource delineation effort and the June 2023 resource delineation effort refresh (Figure 2, Appendix A). Refer to the EENF filing for a complete list of all wetlands and waterbodies that were delineated.

5.1.2.1 Upland Areas

The upland areas consist of successional forests throughout most the Survey Area. The dominant vegetation in the uplands consists of Eastern White Pine (*Pinus* strobus), Northen Dewberry (*Rubus flagellaris*), American Wintergreen (*Pyrola americana*), and Red Maple (*Acer rubrum*). The soils observed throughout upland portions of the Project area were generally classified as silt clay loam.

5.1.2.2 Delineated Wetlands

Per 310 CMR 10.55(2), Bordering Vegetated Wetlands (BVW) are “freshwater wetlands which border on creeks, rivers, streams, ponds and lakes” and “are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants.” TRC identified 225 wetlands within the Project ROW during the September 2020 resource delineation effort and the June 2023 resource delineation effort refresh (Figure 2, Appendix A).

Out of the 225 wetlands TRC delineated, 57 are palustrine emergent (PEM) wetlands. Dominant vegetation within the PEM wetlands includes common rush (*Juncus effusus*), white meadowsweet (*Spiraea alba*), grey alder (*Alnus incana*), sensitive fern (*Onoclea sensibilis*), and wool grass (*Scripus Cyperinus*). Soils were generally comprised of silt loams in PEM wetlands.

Out of the 225 wetlands TRC delineated, 21 are palustrine forested (PFO) wetlands. Dominant vegetation within the PFO wetlands includes red maple (*Acer rubrum*), eastern white pine (*Pinus strobus*), Japanese rose (*Rosa multiflora*), sweet pepperbush (*Clethra alnifolia*), and American hop-hornbeam (*Ostrya virginiana*). Soils were generally comprised of organic matter and silt loams in PFO wetlands.

Out of the 225 wetlands TRC delineated, 135 are palustrine scrub-shrub (PSS) wetlands. Dominant vegetation within the PSS wetlands includes gray alder (*Alnus incana*), sensitive fern (*Onoclea sensibilis*), meadowsweet (*Spiraea alba*), red maple (*Acer rubrum*), and arrowwood (*Viburnum dentatum*). Soils were generally comprised of mucky silt loams in PSS wetlands.

5.1.2.3 Delineated Streams

TRC delineated 85 streams during the September 2020 resource delineation effort and the June 2023 resource delineation effort refresh (Figure 2, Appendix A). Some of the major named rivers and streams within the ROW are Nashua River, Quinsigamond River, and Flint Pond. Out of the 85 delineated waterbodies, there are 43 perennial streams, 39 intermittent streams, four ephemeral streams, two lakes, and three ponds.

5.1.2.4 Certified and Potential Vernal Pools

Vernal pools are temporarily/seasonally flooded wetlands that provide the primary breeding habitat for vernal pool indicator species, and a host of secondary faunal species. Wood frogs (*Lithobates sylvaticus*), spotted salamanders (*Ambystoma maculatum*), blue spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus* spp.) are vernal pool indicator species that depend on vernal pools to complete their life cycles. Vernal pools are offered extra protection under the Wetland Protection Act (WPA) and federal Clean Water Act (CWA).

Before conducting vernal pool surveys, TRC reviewed the NHESP Certified and Potential Vernal Pools GIS data layer to develop a list of priority areas to focus on during the field effort. Wetlands that appeared to have enough standing water to an appropriate depth during the 2020 wetland delineation field season were also included as locations to conduct vernal pool surveys. The vernal pool field delineation was then completed during the early spring of 2021 and again in 2023 during the time-of-year window when vernal pools can be definitively identified. Surveys were conducted by wetland scientists sweeping the potential vernal pool areas with dip nets to collect aquatic organisms for identification. If the requisite indicator species and/or species egg masses were observed, the limits of the vernal pool depression within the larger wetland system were flagged and located with a handheld GPS unit with sub-meter accuracy. The vernal pools that were delineated by TRC in 2023 are shown in Table 5-1.

Table 5-1: Delineated Vernal Pools

ID	NHESP Status	Town
V-GAR-1	None	SHIRLEY
V-GAR-1	None	MILLBURY
V-GAR-10	None	LANCASTER

Table 5-1: Delineated Vernal Pools

ID	NHESP Status	Town
V-GAR-11	None	SHIRLEY
V-GAR-12	Potential	AYER
V-GAR-13	None	AYER
V-GAR-16	Potential	AYER
V-GAR-2	None	SHIRLEY
V-GAR-2	None	BOYLSTON
V-GAR-3	Potential	WEST BOYLSTON
V-GAR-4	None	LANCASTER
V-GAR-4	Potential	STERLING
V-GAR-6	None	STERLING
V-GAR-7	None	LANCASTER
V-GAR-8	None	LANCASTER
V-GAR-9	Potential	LANCASTER
V-HSW-3	None	LANCASTER
V-MBF-1	None	MILLBURY
VP ID: 1829	Certified**	STERLING
**There is one NHESP Certified Vernal Pool shown of Sheet 38 of the Access Plans (Figure 2) that was investigated and determined to not be a vernal pool during TRC's vernal pool surveys in 2020 and 2023.		

5.2 Updated Wetlands and Waterways Impacts

The updated access plans provided in Figure 2, Appendix A depict the extent of the area that will be graded for the work pads. The impacts summarized below reflect the shift of some work pads out of wetlands. Additional efforts that were completed and that are reflected in the updated access plans involve, but are not limited to:

- In areas where work pads are in close proximity to environmentally sensitive areas, construction crews will work from one side of a work pad to minimize impacts.
- In environmentally sensitive areas, NEP will aim to reassess and reduce the size of the work pads to minimize impacts once construction is complete.
- Use terraced work pads on steep slopes to minimize grading.

5.2.1 Coldwater Fisheries

There are no permanent impacts proposed to waterbodies, so no adverse impact to cold water fisheries is anticipated. Please see Figure 2, Appendix A for the locations of cold-water fisheries in relation to the Project. Wherever possible, streams are spanned with mats and the stream flow

will be maintained. Additionally, there are no culvert replacements or extensions required for this work, therefore the Project is not subject to the Massachusetts Stream Crossing Standards.

5.2.2 Permanent Impacts

As mentioned in the EENF filing, the Project will result in permanent impacts to the 100-foot buffer zone of wetlands or streams, RA, and BVW from the construction of work pads, pull pads, structure replacements and road access upgrades. Four structures are being replaced in wetlands that will have new drilled concrete pier foundations that are larger than the area occupied by the existing wood pole, direct embed foundations. The new foundations will exceed the area of the foundations being removed, which will lead to a minor, permanent wetland impact. NEP is preparing a 1:1 wetland mitigation package that will be in compliance with MA DEP Inland Wetland Replication Guidance.

Table 5-2 below shows that Permanent Wetland and Waterbody Impacts.

Table 5-2: Permanent Wetland and Waterbody Impacts

Resource Area	Permanent Impact (acres)
100-foot Buffer	36.8
RA	8.3
BLSF	1.5
Inland Bank	0
LUW	0
BVW	0.005 (244 sf)
Outstanding Resource Waters (ORW)	0

Approximately 8.3 acres of RA will be permanently impacted for the construction of work pads that require grading and access road upgrades. Road upgrades will involve limited grading and addition of stone to existing access roads, while some work pad construction will involve more extensive grading in RA depending on the topography.

5.2.3 Temporary Impacts

The Project will result in temporary impact to BLSF, BVW, Land Under Water (LUW), Bank and Outstanding Resource Waters (ORWs) due to the placement of construction matting to create work pads, pull pads and access roads (Table 5-3). Since filing the EENF, NEP has decided to make all work pads within BLSF and all pull pads temporary. The construction mats will be installed to allow access for heavier equipment and vehicles to support the road building and line work and are considered a BMP to reduce wetland impacts by avoiding soil compaction. Construction mats will be removed from all resource areas after the Project is completed. Once the construction mats are removed, disturbed areas will be restored as described in Section 5.3.

Table 5-3: Temporary Wetland and Waterbody Impacts

Resource Area	Temporary Impact (acres)
100-foot Buffer	54.8
RA	15.5
BLSF	7.8
Inland Bank	3,502 linear feet
Land Under Water	1.0
BVW	20.3
ORW	7.5

5.2.4 Outstanding Resource Waters

As noted in MassDEP's comment to the EENF, as tributaries to the Wachusett Reservoir, all wetlands within the easement between the Boylston/West Boylston town line and Kendall Hill Road in Sterling are ORWs. Although there is some work proposed within wetlands that border tributaries to the Wachusett Reservoir, there will be no matting within 400-feet of Wachusett Reservoir. Therefore, a 401 Water Quality Variance will not be required for this Project.

As shown in Tables 5-2 and 5-3 above, there will be no permanent impacts within ORW. There will only be 7.5 acres of temporary impact within ORW as a result of the matting.

5.2.5 Chapter 91

There are 31 streams and rivers, two ponds and one lake along the Project ROW that are presumptively subject to Chapter 91. The limit of Chapter 91 jurisdiction is the ordinary high-water mark, which has been added to the legend on the Access Plans (Figure 2, Appendix A). The Project work associated with the transmission line crossings of jurisdictional streams and rivers is exempt from licensing as maintenance under 310 CMR 9.05(3)(a) and 9.22(1). All jurisdictional crossings are either licensed (see Table 12-1) or qualify as exempt under 310 CMR 9.05(3)(c) and (f) because the transmission lines were originally constructed in 1929 (O141/P142) or 1969 (Line 313/343) and the crossings have not undergone unauthorized structural alterations since January 1, 1984. The construction mats used to span certain streams (Pages 2, 4, 6, 12, 13, 14, 17, 22, 24, 31, 32, 33, 34, 41, 42, 44, 57, 58, 83, Figure 2, Appendix A), are a temporary construction best management practice directly associated with transmission line maintenance activities. This maintenance work is required under 310 CMR 9.22(1), which expressly states that "no application for license or license amendment shall be required for such activity."

5.2.6 Wildlife Habitat Evaluations

NEP is preparing Wildlife Habitat Evaluations under the WPA to identify typical wildlife habitat features that occur along the Project ROW and how those features will be impacted by the proposed work. These Wildlife Habitat Evaluations will be included as attachments to the NOIs that are being filed for the Project.

5.3 Mitigation Measures for Wetlands and Waterways

Impacts to BLSF, LUW and Inland Bank are all temporary from the placement of construction mats and nearly all work in BVW is also temporary. These areas will be fully restored once the work is completed and the construction mats are removed. Existing contours will be restored and disturbed soils will be stabilized until they are re-vegetated. Due to the nature of the work some permanent disturbance to the regulated RA, BVW, and 100-foot buffer zone is unavoidable. However, the roadway types have been selected to have minimal disturbance to the RA and buffer zones, while allowing construction vehicles access to the required locations for the Project. Although NEP is proposing that the improvements to the roadways and work pads will be permanent, these areas will be semi-pervious and therefore will allow water to infiltrate. In addition, roadway improvements are occurring in previously developed areas of RA and BLSF where there are existing access roads and/or cart paths. NEP will mitigate work pad impacts by loaming and seeding over the work pads within RA as needed so that vegetation is restored. Roads in BLSF will either be matted or over-excavated before stone is added so that there is no loss of flood storage capacity.

NEP has reduced impacts by making many work pads in RA temporary. Although work will occur in a regulated area, BMPs will be utilized, and temporarily disturbed areas will be restored after the work is complete. Proposed BMPs and mitigation measures are discussed further below and shown in the applicable pages of National Grid's Environmental Guidance Document – *ROW Access, Maintenance and Construction Best Management Practices* (EG-303NE) (Appendix C).

BMPs that will be implemented include:

- having an Environmental Inspector/Monitor on-site during construction;
- provide wetland replication for the minimal permanent disturbance to regulated wetlands;
- using construction mats for equipment access to the wetland, which avoids rutting and direct soil disturbance;
- using erosion controls where an erosion hazard exists;
- restoring altered areas to pre-construction conditions by applying a native seed mix and or mulching with straw, if necessary;
- keeping spill response equipment on-hand and ready for deployment in the event of a spill; and
- refueling any equipment outside RA and buffer zone.

6.0 Rare Species

6.1 Existing State-Listed Rare Species

To assess the potential for state or federally listed, endangered, threatened, and/or special concern plant and/or animal species along the Project route, NEP reviewed MassGIS Mapper 2022 PH and EH data layers and solicited database information from the NHESP.

Based on NHESP data layers and consultation, the Project route contains two reptiles, two invertebrates, two birds and one plant, along portions of the Project route in Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury (Table 6-1). The names and locations of these species are not provided, as requested by NHESP.

Table 6-1: NHESP Rare Species within the Project ROW

Type of Species	MESA Status
Reptile	Threatened
Reptile	Special Concern
Invertebrate	Special Concern
Invertebrate	Special Concern
Bird	Special Concern
Bird	Special Concern
Plant	Special Concern

6.2 Updated Impacts to Rare Species

Permanent and temporary impacts to NHESP PH from work pads, pull pads, and road upgrades are presented in Table 6-2 below.

Table 6-2: NHESP Rare Species within the Project ROW

Priority Habitat ID	Permanent Impacts (acres)	Temporary Impacts (acres)
PH 1145	0.22	1.17
PH 1245	2.20	1.46
PH 1280	0.56	1.53
PH 1373	1.28	3.51
PH 1561	5.10	6.71
PH 1738	8.24	2.54
PH 2035	9.98	8.00

Table 6-2: NHESP Rare Species within the Project ROW

Priority Habitat ID	Permanent Impacts (acres)	Temporary Impacts (acres)
PH 2043	10.30	3.00
Total Impact	37.9	27.9

To minimize species and habitat impacts to the maximum extent feasible, the Project will use NHESP-approved, species-specific measures to reduce impacts in accordance with the NHESP Operations & Maintenance (O&M) Plan issued to National Grid (NHESP File No. 22-40898) for most of the species found along the ROW. Additional mitigation measures for the two state-listed turtle species that occur along the ROW will be determined through continued consultation with NHESP.

6.3 Proposed Mitigation Measures

Since filing the EENF, NEP has submitted a draft MESA checklist to NHESP and met virtually with NHESP on March 27, 2024, to review and discuss concerns and mitigation for habitat impacts.

NHESP identified that stand-alone turtle protection plans for two turtle species will be needed, including a habitat assessment. In response, in late April/early May of 2024, NEP completed the turtle habitat assessment. A summary of this assessment is found below.

- Between April 29 and May 6th two TRC biologists conducted habitat assessments on the approximately 15-mile segment of ROW.
- The survey team concentrated their efforts on NHESP mapped potential habitat polygons and the immediate surrounding environs.
- The ROW was separated into segments from structure to structure, and each segment was rated on a scale of 1-4 indicating its suitability for use by rare turtles for feeding, nesting, and hibernation.
- Habitat data, potential turtle usage, and photographs were logged for each segment. Special attention was given to segments containing vernal pools, perennial streams, and open marshlands which would have a high probability of harboring turtle populations.
- Wandering transects of promising high suitability habitat (Rating 3+) were also conducted to locate turtles; in total three wood turtles and one potential Blanding's turtle nest were discovered during the surveys.
- Photographs of each structure's proposed work pad were collected and logged to determine potential construction effects on the surrounding habitat.
- NEP is currently working on a Habitat assessment Report to quantify and summarize the findings.

As directed by NHESP, for the rest of the species, NEP will implement the necessary actions to avoid, minimize, and mitigate Project-related impacts in accordance with the O&M Plan. In PH, it

is anticipated that operation and maintenance will follow the approved O&M Plan. We anticipate the road activities may fall outside of certain Time-Of-Year (TOY) restrictions outlined in the O&M Plan; however, NEP will work with NHESP to avoid and minimize these activities to the greatest extent practicable.

NEP continues to work closely with NHESP to develop mitigation measure for each species. At this time, proposed mitigation includes, but is not limited to the following:

- NHESP O&M Plan compliance
- Turtle trainings for construction crews
- Habitat assessment for (completed Spring 2024)
- Develop turtle protection plans and Species Protection Plans for species of concern
- Prioritize the use of temporary workpads (or matting) over permanent workpads in turtle habitat whenever possible
- Avoid work during sensitive dates to the best extent possible
- Survey for host plant of rare species (completed Fall 2023)
- Utilize erosion controls to avoid sedimentation into rivers with rare species
- Delineate rare plant locations for avoidance (completed Fall, 2023)
- Avoid wetland work in locations where there is rare species habitat
- EFI training to all construction personnel
- Extensive “sweeps” and monitoring during construction
- Restoration of work pad impacts with loam and seed to restore vegetation as needed
- Protective enclosure and fencing

Mitigation efforts will continue to be refined during the field visits mentioned above and further discussions with NHESP. If, after consultation with NHESP, it is determined that a take will occur, a Conservation and Management Permit (CMP) will be prepared to comply with MESA.

7.0 Historical/Archaeological Resources

NEP retained The Public Archaeology Laboratory, Inc. (PAL) to perform an historic and archaeological review of the Project area. PAL conducted a cultural resource due diligence and archaeological sensitivity assessment of the existing 313/343 and O141/P142 line ROW in April 2021 and March 2022. The due diligence included a file review of previously recorded cultural resources in the Project vicinity and a desktop archaeological sensitivity assessment of the ROW to provide information about cultural resources that could be affected by the Project. The file review resulted in the identification of previous archaeological surveys that overlapped with the existing NEP ROW and multiple inventoried historic and archaeological resources along the Project ROW. As part of the desktop archaeological sensitivity assessment, PAL assessed the existing ROW as having high, moderate, and low archaeological sensitivity.

PAL reviewed the proposed Project impact areas and prepared a technical proposal to conduct an intensive (locational) archaeological survey for the Project. PAL submitted State Archaeologist's Permit applications to the Massachusetts Historical Commission (MHC) for the 313/343 and O141/P142 lines on May 4, 2022, and July 29, 2022. The MHC issued Permit #4198 to PAL to conduct the survey for the 313/343 line on July 6, 2022, and issued Permit #4204 to PAL to conduct the survey for the O141/P142 line on August 8, 2022. On August 4, 2023, PAL requested the MHC amend the intensive archaeological survey permits to include access road upgrades, and on August 17, 2023, MHC amended the permits. See Appendix D for a record of correspondence.

PAL conducted an intensive (locational) archaeological survey in 2022 and 2023 at structure replacement work pad and pull pad locations and along the access roads. The survey identified 26 archaeological sites that are within or overlap the Project impact areas. PAL is recommending seven of the identified sites as potentially eligible for listing in the National Register of Historic Places and has developed an archaeological site avoidance and protection plan (ASAPP) for these sites to avoid, minimize, and/or mitigate adverse effects that Project construction will have on them. The measures in the ASAPP include limited archaeological mitigation investigations at four of the seven potentially eligible sites where direct Project impacts that cannot be avoided will occur. In May 2024, PAL submitted the survey report, the draft ASAPP, and a technical proposal to conduct the limited archaeological mitigation work to the MHC and other consulting parties for review. PAL plans to conduct the limited archaeological mitigation work once the MHC completes their review and issues amendments to the survey permits. NEP will continue to consult with the MHC, DCR, and Native American Tribes throughout the permitting process to avoid, minimize, and/or mitigate adverse effects to historic and archaeological resources that may be affected by the Project.

8.0 Construction Period and Hazardous Waste

8.1 Oil and Hazardous Material Management

8.1.1 Consistency with AUL and PFAS

At the request of NEP, Coneco Engineers & Scientists, Incorporated (Coneco) conducted due diligence activities to provide an initial summary of known oil and/or hazardous material (OHM) releases or hazardous waste sites that may impact the Project, the terms of the three Activity and Use Limitations (AULs) that intersect the Project corridor, and address potential concerns raised by MassDEP relative to the presence of per- and poly-fluoroalkyl substances (PFAS) in groundwater near the Spectacle Pond municipal drinking water well located off Spectacle Pond Road in Ayer and a tire recycling facility at 43 Willow Road in Ayer.

As indicated in the attached summary table of known state and federal OHM sites (Appendix E), potential OHM impacts to the portion of the Project within the Town of Ayer have been identified at the following locations and Structures:

- Sandy Pond Substation located at 65 Westford Road (historical releases of non-polychlorinated biphenyl [non-PCB] mineral oil dielectric fluid [MODF]);
- Structures 307 and 308 (associated with a historical hydraulic oil release);
- Structures 329, 330, and 331 (associated with the area-wide presence of PFAS in groundwater).

Construction recommendations related to the historical releases will be outlined to all construction crews in advance of construction and are standard recommendations related to the potential presence of residual OHM in soil or groundwater. In addition, as indicated in Table 1, Structure 331 is located within the AUL that was implemented at the Sandy Pond Substation. Coneco notes that MassDEP records also indicate that PFAS were detected in soil and groundwater samples collected from areas affected by a previous fire that occurred in 1995 at the Sandy Pond Substation.

Coneco notes that AULs were also implemented at the Pratts Junction Substation in Sterling and for the Disposal Site associated with the Wyman Gordon site located at 244 Worcester Street in North Grafton. Based on the currently available Project information, the work within the AULs located at the Pratts Junction Substation and the Wyman Gordon site will be limited to work pads and are unlikely to result in soil disturbance.

As previously indicated, proposed Structures 329, 330, and 331 are located in the area of the documented presence of PFAS in groundwater in Ayer associated with the Spectacle Pond drinking water supply well. Therefore, Coneco's opinion is that any dewatering activities associated with these three structures must be conducted in accordance with the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000) and any excess soil will be managed in accordance with a site-specific Soil and Groundwater Management Plan. Specifically,

- If dewatering is needed for the installation of Structure Nos. 329, 330, and 331, the dewatering shall be conducted in accordance with National Grid Environmental Guidance (EG)-303NE and 310 CMR 40.0045(5) of the MCP or containerized for proper off-site

disposal. Pursuant to Section 40.0045(5) of the MCP, if the groundwater is not containerized for proper off-site disposal, the discharge will occur at a point within 100 feet of and hydrologically upgradient from the point of withdrawal.

- Any soil generated during the installation of Structure Nos. 329 and 330, located within or adjacent to the Sandy Pond Substation, shall be presumed to contain PFAS. The soil shall be placed on 6-mil polyethylene sheeting and covered with the same or placed within properly labeled and sealed Department of Transportation-approved drums or bulk containers. The soil stockpiling area shall be constructed in accordance with EG-303NE. The stockpile and associated polyethylene sheeting, if used, shall be routinely inspected for tears or perforations. Containerized soil shall be stored within a secure area to minimize potential vandalism. Upon completion of the soil disturbance activities, the Project Qualified Environmental Professional will collect samples of the stockpiled or containerized soil for laboratory analyses to characterize the media and determine an appropriate facility for off-Site disposal.

8.1.2 Spill Contingency Plan

NEP will require all contractors to abide by the *National Grid Immediate Spill Response Actions Guidance (EG-501MA)* and *National Grid Spill Response Notifications (EG-502MA)* which provides:

- Instructions to field crews on immediate actions to take in the event of an oil or hazardous materials spill; and
- Clarity on the roles and responsibilities of all company employees and contractors who may be involved in spill response activities.

The *EG-501MA* and *EG-502MA* are provided in Appendix F.

9.0 Environmental Justice

The Project is within 1 mile of an EJ Population and therefore requires review under MEPA environmental justice protocols. NEP has identified 77 EJ Populations within 1-mile of the Project (the Designated Geographic Area (DGA)), (Appendix A, Figure 4). The identified EJ Populations within the DGA are distributed in eight municipalities:

- Ayer (EJ Population: 40.8 percent)
- Shirley (EJ Population: 47.9 percent)
- Leominster (EJ Population: 67.1 percent)
- Lancaster (EJ Population: 39.0 percent)
- Worcester (EJ Population: 82.5 percent)
- Millbury (EJ Population: 8.5 percent)
- Shrewsbury (EJ Population: 61.3 percent)
- Harvard (EJ Population: 23.8 percent)

Based on the Massachusetts Department of Health (MA DPH) EJ Tool analysis, NEP identified populations that met the EJ criteria of income, minority, minority and income, minority and English isolation, and minority, income, and English isolation within the designated geographical area.

English Isolation EJ Populations were identified within seven EJ Populations within Worcester:

- Block Group 3, Census Tract 7302 (Limited English households: 38.01 percent)
- Block Group 2, Census Tract 7316.01(Limited English households: 25.20 percent)
- Block Group 2, Census Tract 7318.01 (Limited English households: 29.20 percent)
- Block Group 2, Census Tract 7318.02 (Limited English households: 33.93 percent)
- Block Group 1, Census Tract 7320.01 (Limited English households: 50.95 percent)
- Block Group 1, Census Tract 7322.03 (Limited English households: 25.93 percent)
- Block Group 2, Census Tract 7322.03 (Limited English households: 33.42 percent)[2]

No other English Isolation EJ Populations were identified within the DGA.

Table 9-1 summarizes all 77 EJ Populations present, their EJ Criteria, population, and median income within the DGA and Census Tract. The 22 EJ Populations that cross the Project corridor are in bold.

2 Data for languages spoken was obtained from the American Community Survey 2015-2019 5-year estimates.

Table 9-1: MA DPH EJ Communities (1-Mile)

Municipality	Census Block Group (BG)	Category	Minority Population (%)	Median Income
AYER	BG 1, Tract 3251.01	Minority	27.17	$82,857
	BG 1, Tract 3251.02	**Income**	**18.65**	**$52,120**
	BG 4, Tract 3251.02	Minority	29.37	$81,500
	BG 5, Tract 3251.02	Minority	39.61	$68,462
SHIRLEY	**BG 2, Tract 3882**	**Minority**	**41.12**	**$69,342**
LEOMINSTER	BG 1, Tract 7092.03	Minority	31.39	$120,833
	BG 1, Tract 7092.04	Minority	43.82	$92,567
	BG 3, Tract 7092.04	**Minority**	**30.41**	**$87,559**
LANCASTER	**BG 4, Tract 7131**	**Minority**	**36.04**	**$108,676**
WORCESTER	**BG 1, Tract 7301**	**Minority**	**40.74**	**$104,228**
	BG 2, Tract 7301	Minority	34.68	$76,351
	BG 3, Tract 7301	Minority	39.76	$79,926
	BG 4, Tract 7301	**Minority**	**37.69**	**$60,430**
	BG 1, Tract 7302,	**Minority**	**36.09**	**$107,574**
	BG 2, Tract 7302	Minority	44.44	$55,938
	BG 3, Tract 7302	Minority, income, English isolation	25.36	$44,681
	BG 5, Tract 7302	Minority	26.31	$68,917
	BG 1, Tract 7303	**Minority**	**39.38**	**$55,733**
	BG 2, Tract 7303	**Minority**	**40.54**	**$79,118**
	BG 3, Tract 7303	Minority	25.48	$87,625
	BG 4, Tract 7303	Minority	39.07	$55,682
	BG 5, Tract 7303	**Minority**	**31.68**	**$87,656**

Table 9-1: MA DPH EJ Communities (1-Mile)

Municipality	Census Block Group (BG)	Category	Minority Population (%)	Median Income
	BG 1, Tract 7304.01	Minority	40.48	$67,969
	BG 2, Tract 7304.01	**Minority**	**32.21**	**$87,875**
	BG 3, Tract 7304.01	Minority, income	75.44	$31,365
	BG 1, Tract 7304.02	Minority, income	52.94	$54,875
	BG 2, Tract 7304.02	Minority	69.64	$61,607
	BG 1, Tract 7305	Minority, income	42.03	$49,046
	BG 2, Tract 7305	**Minority**	**70.51**	**$59,375**
	BG 3, Tract 7305	Minority, income	41.78	$44,125
	BG 2, Tract 7306	Income	21.69	$17,179
	BG 5, Tract 7306	Minority, income	24.91	$34,952
	BG 1, Tract 7316.01	Minority, income	48.36	$17,012
	BG 5, Tract 7316.01	Minority, income	41.82	$44,145
	BG 1, Tract 7316.02	Minority, income	34.71	$45,135
	BG 2, Tract 7316.02	Minority, income, English isolation	34.35	$25,921
	BG 2, Tract 7317	Minority, income	46.12	$34,856
	BG 1, Tract 7318.01	Minority, income	44.13	$47,208
	BG 2, Tract 7318.01	Minority, income, English isolation	50.43	$15,176
	BG 2, Tract 7318.02	Minority, income, English isolation	91.93	$11,543
	BG 3, Tract 7318.02	Minority	77.00	$97,885
	BG 1, Tract 7319	Minority, income	68.79	$33,804
	BG 2, Tract 7319	Minority, income	70.71	$53,375

Table 9-1: MA DPH EJ Communities (1-Mile)

Municipality	Census Block Group (BG)	Category	Minority Population (%)	Median Income
	BG 3, Tract 7319	Minority, income	74.53	$43,646
	BG 4, Tract 7319	Minority, income	71.39	$37,429
	BG 1, Tract 7320.01	Minority, income, English isolation	85.17	$15,718
	BG 2, Tract 7320.01	Minority, income	73.48	$30,000
	BG 1, Tract 7320.02	Minority	62.88	$65,965
	BG 2, Tract 7320.02	Minority	39.74	$60,893
	BG 3, Tract 7320.02	Minority	33.37	$67,188
	BG 1, Tract 7322.01	Minority, income	35.56	$45,224
	BG 2, Tract 7322.01	**Minority**	**47.57**	**$76,250**
	BG 1, Tract 7322.02	Minority, income	41.89	$51,163
	BG 2, Tract 7322.02	**Minority**	**38.89**	**$92,344**
	BG 1, Tract 7322.03	Minority, English isolation	56.73	$75,401
	BG 2, Tract 7322.03	Minority, English isolation	51.76	$68,902
	BG 3, Tract 7322.03	Minority, income	68.75	$39,732
	BG 1, Tract 7323.01	Minority	42.72	$61,607
	BG 2, Tract 7323.01	**Minority**	**35.12**	**$68,795**
	BG 1, Tract 7323.02	Minority, income	56.12	$39,207
	BG 2, Tract 7323.02	Minority	46.02	$77,561
	BG 1, Tract 7328.01	**Minority**	**32.93**	**$77,821**
	BG 2, Tract 7328.01	Minority	42.81	$70,766
	BG 1, Tract 7328.02	Minority	41.79	$63,676

Table 9-1: MA DPH EJ Communities (1-Mile)

Municipality	Census Block Group (BG)	Category	Minority Population (%)	Median Income
MILLBURY	BG 1, Tract 7372	Income	16.65	$53,875
	BG 2, Tract 7372	Income	13.73	$53,375
SHREWSBURY	**BG 2, Tract 7391.01**	**Minority**	**32.05**	**$72,425**
	BG 3, Tract 7391.01	**Minority**	**44.44**	**$131,200**
	BG 1, Tract 7391.02	Minority	57.23	$148,523
	BG 2, Tract 7391.02	Minority	58.24	$100,313
	BG 1, Tract 7392.01	**Minority**	**35.00**	**$80,756**
	BG 2, Tract 7392.01	Minority	52.80	$74,873
	BG 1, Tract 7392.02	**Minority**	**40.31**	**$94,946**
	BG 2, Tract 7392.02	Minority	40.02	$92,500
	BG 2, Tract 7393	**Minority**	**38.18**	**$85,625**
	BG 4, Tract 7395	**Minority**	**29.78**	**$114,198**
HARVARD	BG 2, Tract 7614.02	Minority	47.70	$133,594

Source:

Note: BG indicates block group.

Highlighted rows indicate the EJ Population crosses the Project ROW.

In addition, NEP identified 200 EJ communities present within a 5-mile radius of the Project Area. This Project does not trigger the 5-mile radius requirement.

9.1 Public Involvement Plan

Since filing the EENF, NEP has continued to undertake measures to promote public involvement in the MEPA process through meaningful community outreach and engagement. NEP continues to consult the MEPA EJ Public Involvement Protocol to determine the appropriate community engagement strategies for this Project.

In preparation for the MEPA site walk (which occurred on January 17, 2024), NEP posted legal ads in each of the ten (10) municipalities newspapers which included links for translations

services. NEP additionally offered translation services for the MEPA remote consultation session held on January 17, 2024.

In conjunction with the filing of the SEIR, NEP will send out an e-mail to the EJ Reference List notifying them that the SEIR has been filed.

NEP continues to update the public website, available in all the languages listed above, with details of the Project and contact information for review. The website contains a toll-free number and email address which are directed to the outreach team at NEP for follow up. NEP has established a Project-specific email address (info@centralmassreliability.com) for community members to ask any remaining questions they may have. The website address, www.centralmassreliability.com, in addition to the Project-specific email address were also provided on the Project Notice. To date, no comments or questions have been received from the public on the Project.

Repositories for hard copies of Project materials have been established at public libraries and/or town halls or transfer stations within each of the ten (10) municipalities within the Project Site in the Commonwealth of Massachusetts, which will be updated regularly as additional Project documents become available.

9.2 Assessment of Existing Unfair or Inequitable Environmental Burden / Public Health

The following section outlines the assessment of existing unfair or inequitable environmental burden onto EJ Populations which includes assessments on vulnerable health EJ criteria, a MA DPH Tool EJ survey, RMAT Climate Resilience Design Standards Tool (RMAT Tool), the USEPA "EJ Screen" tool survey, and feedback from the MEPA office.

9.2.1 Vulnerable Health Criteria

The DPH's Bureau of Environmental Health worked with the Executive Office of Energy and Environmental Affairs (EOEEA) to identify four environmentally related health indicators to identify populations and communities with higher-than-average rates of environmentally related health outcomes. The four vulnerable health criteria include: Low Birth Weight Rate, Pediatric Asthma Ed Visits Rate per 10,000, Heart Attack Rate, and Lead Poisoning Rate for each Census tract and municipality.[3] Vulnerable health criteria are defined as environmentally related health indicators that are measured to be greater than 110 percent of the state-wide averages.

Using the information provided in Table 9-2 that identifies the eight municipalities that have EJ Populations within the DGA, NEP reviewed the MA DPH EJ Tool vulnerable health criteria data layers and solicited database information available on their website. Using the DPH EJ Tool, NEP identified EJ Populations within the DGA that exhibit one or more of the four specific vulnerable health criteria. Utilizing the MEPA EJ Protocol and the DPH EJ Tool, it was determined that four municipalities present within the DGA meet at least one vulnerable health EJ criteria (Table 9-2). Although these surveys identify vulnerable health EJ criteria within the DGA, due to the nature of

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

the work, the Project has no potential to exacerbate an unfair or unequitable environmental burden and related public health consequences.

Table 9-2: Vulnerable Health EJ Criteria (1-Mile)

Municipality	EJ and Vulnerable Health EJ Criteria Status	Vulnerable Health Topic EJ Criteria Met	Rate per 1,000[4]*
AYER	Meets at least one Vulnerable Health EJ Criteria	Heart Attack Rate per 10,000	40.5
SHIRLEY	Meets at least one Vulnerable Health EJ Criteria	Heart Attack Rate per 10,000	35.3
LEOMINSTER	Meets at least one Vulnerable Health EJ Criteria	Heart Attack Rate per 10,000	38.3
		Pediatric Asthma Ed Visits Rate per 10,000	92.8
WORCESTER	Meets at least one Vulnerable Health EJ Criteria	Pediatric Asthma Ed Visits Rate per 10,000	136
		Lead Poisoning Rate per 1,000	21.8
		Low Birth Weight Rate per 1,000	261.1
*Rounded to the tenth			

9.2.2 Other Potential Sources of Pollution (Additional DPH EJ Tool Layers)

Using additional DPH EJ Tool layers, NEP identified sources of pollution in the eight (8) municipalities within the DGA that may be contributing to the existing unfair or inequitable environmental burden and related public health consequences. Out of the 77 EJ Populations located within the DGA, 61 EJ Populations within 8 municipalities were identified to have potential existing sources of pollution. Pollution sources that were reviewed included MassDEP major air and waste facilities, M.G.L.c.21E sites, “Tier II” toxics use reporting facilities, MassDEP sites with AULs, MassDEP groundwater discharge permits, wastewater treatment plants, MassDEP public water suppliers, underground storage tanks, EPA facilities, road infrastructure, Massachusetts Bay Transportation Authority (MBTA) bus and rapid transit, other transportation infrastructure, regional transit agencies, and energy generation and supply.

TRC used this data to create Figure 5 in Appendix A, which shows the potential sources of pollution within one mile (see Table 9-3). In general, the data shows that Worcester has most of these pollutant sources while the other municipalities within the Project area have fewer of these pollutant sources.

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

Table 9-3: Other Potential Sources of Pollution within EJ Populations (1-Mile)

Facility Type	Number of Pollutant Sources within One Mile of the Project
Air Operating Permits	3
Hazardous Waste Recycler	1
Large Quantity Toxic User	30
M.G.L. c. 21E Sites	50
"Tier II" Toxics Use Reporting Facilities	141
MassDEP Sites with AULs	96
MassDEP Groundwater Discharge Permits	1
Wastewater Treatment Plants	5
MassDEP Public Water Suppliers	51
Underground Storage Tanks	79
EPA Facilities	34
Energy Generation and Supply	43
Regional Transit Agencies	2
Airports	1
MBTA Stations	7
MBTA Lines	2
Bus Routes	31

Ayer

In Ayer, there are 53 total sources of pollution within EJ Populations.

- Within Block Group 1, Census Tract 3251.01, 11 potential pollution sources were identified including two large quantity toxic users, four "Tier II" Toxic use reporting facilities, four underground storage tanks, and one EPA facility.
- Within Block Group 1, Census Tract 3251.02, three potential pollution sources were identified including one "Tier II" Toxic use reporting facility, and two energy generation and supply sources.
- Within Block Group 4, Census Tract 3251.02, five potential pollution sources were identified including one M.G.K. c. 21E site, one "Tier II" Toxic use reporting facility, two MassDEP groundwater discharge permits, and one EPA facility.
- Lastly, within Block Group 5, Census Tract 3251.02, there are 34 potential sources of pollution including one large quantity toxic user, two M.G.K. c. 21E sites, 12 "Tier II" Toxic use reporting facilities, one MassDEP sites with AULs, one wastewater treatment plant, seven MassDEP public water suppliers, three underground storage tanks, three EPA facilities, and four energy generation and supply sources.

Harvard

In Harvard, there are 34 total sources of pollution within Block Group 2, Census Tract 7614.02 including five large quantity toxic users, 14 “Tier II” Toxic use reporting facilities, one MassDEP groundwater discharge permit, three MassDEP public water suppliers, three underground storage tanks and five EPA facilities.

Lancaster

In Lancaster, there are 38 total sources of pollution within Block Group 4, Census Tract 7131 including one M.G.K. c. 21E site, one wastewater treatment plants, 19 MassDEP public water suppliers, three underground storage tanks, one EPA facility and 13 energy generation and supply sources.

Leominster

In Leominster, there are 22 total sources of pollution within EJ Populations.

- Within Block Group 1, Census Tract 7092,03, one potential pollution source was identified for energy generation and supply.
- Within Block Group 1, Census Tract 7092.04, 15 potential pollution sources were identified including two large quantity toxic users, four “Tier II” Toxic use reporting facilities, one MassDEP site with AUL, three MassDEP public water suppliers, one EPA facility, and four energy generation and supply sources.
- Within Block Group 3, Census Tract 7092.04, six potential pollution sources were identified including one large quantity toxic user, one M.G.K. c. 21E site, one “Tier II” Toxic use reporting facility, two underground storage tanks, and one energy generation and supply source.

Millbury

In Millbury, there are 22 total sources of pollution within EJ Populations.

- Within Block Group 1, Census Tract 7372, 16 potential pollution sources were identified including two large quantity toxic users, four Tier II” Toxic use reporting facilities, four MassDEP sites with AULs, one wastewater treatment plants, one MassDEP public water suppliers, two underground storage tanks, one EPA facility and one energy generation and supply source.
- Within Block Group 2, Census Tract 7372, six potential pollution sources were identified including one M.G.K. c. 21E site, one “Tier II” Toxic use reporting facility, underground storage tanks, and one energy generation and supply source.

Shirley

In Shirley, there are 16 total sources of pollution within Block Group 2, Census Tract 3882 including two large quantity toxic users, four “Tier II” Toxic use reporting facilities, five MassDEP

sites with AULs, one underground storage tank, one EPA facility, and three energy generation and supply sources.

Shrewsbury

In Shirley, there are 91 total sources of pollution within EJ Populations.

- Within Block Group 1, Census Tract 7391.02, there are eight sources of pollution including three “Tier II” Toxic use reporting facilities, three MassDEP sites with AULs and two underground storage tanks.
- Within Block Group 1, Census Tract 7392.01, there are two sources of pollution including one M.G.K. c. 21E site and one energy generation and supply source.
- Within Block Group 1, Census Tract 7392.02, there are five sources of pollution including two MassDEP sites with AULs, two underground storage tanks, and one energy generation and supply source.
- Within Block Group 2, Census Tract 7391.01, there are six sources of pollution including one hazardous waste recycler, one M.G.K. c. 21E site, three “Tier II” Toxic use reporting facilities, and one energy generation and supply source.
- Within Block Group 2, Census Tract 7391.02, there are 38 sources of pollution including one large quantity toxic user, 18 “Tier II” Toxic use reporting facilities, four MassDEP sites with AULs, eight MassDEP public water suppliers, two underground storage tanks, four EPA facilities and one energy generation and supply sources.
- Within Block Group 2, Census Tract 7392.01, there is one source of pollution including a Tier II” Toxic use reporting facility. Within Block Group 2, Census Tract 7392.02, there are five sources of pollution including one M.G.K. c. 21E site, one “Tier II” Toxic use reporting facility, one wastewater treatment plant, and two MassDEP public water suppliers.
- Within Block Group 2, Census Tract 7393, there are three sources of pollution including two “Tier II” Toxic use reporting facilities, and one energy generation and supply source.
- Within Block Group 7391.01, there are ten sources of pollution including one air operating permit, one large quantity toxic user, three “Tier II” Toxic use reporting facilities, two underground storage tanks, one EPA facility, and two energy generation and supply sources.
- Within Block Group 4, Census Tract 7395, there are 13 sources of pollution including one large quantity toxic user, two “Tier II” Toxic use reporting facilities, seven MassDEP water suppliers, two EPA facilities, and one energy generation and supply source.

Worcester

In Worcester, there are 261 total sources of pollution within EJ Populations.

- Within Block Group 1, Census Tract 7301, there are 31 sources of pollution including two large quantity toxic users, four M.G.K. c. 21E sites, seven "Tier II" Toxic use reporting facilities, 11 MassDEP sites with AULs, one wastewater treatment plants, five EPA facilities, and one energy generation supply source.
- Within Block Group 1, Census Tract 7302, there are four sources of pollution including three MassDEP sites with AULs, and one underground storage tank.
- Within Block Group 1, Census Tract 7303, there are two sources of pollution including one "Tier II" Toxic use reporting facility and one underground storage tank.
- Within Block Group 1, Census Tract 7304.01, there are two sources of pollution identified as underground storage tanks.
- Within Block Group 1, Census Tract 7304.02, there are seven sources of pollution including two large quantity toxic users, one "Tier II" Toxic use reporting facility, two MassDEP sites with AULs, one underground storage tanks, and one EPA facility.
- Within Block Group 1, Census Tract 7305 there is one source of pollution identified as a "Tier II" Toxic use reporting facility.
- Within Block Group 1, Census Tract 7319, there are six sources of pollution including two M.G.K. c. 21E sites, three "Tier II" Toxic use reporting facilities, and one underground storage tank.
- Within Block Group 1, Census Tract 7320.01, there are four sources of pollution including one M.G.K. c. 21E site, one "Tier II" Toxic use reporting facility, one MassDEP sites with AULs, and one energy generation and supply source.
- Within Block Group 1, Census Tract 7320.02, there are 14 sources of pollution including one large quantity toxic user, three M.G.K. c. 21E sites, three "Tier II" Toxic use reporting facilities, three MassDEP sites with AULs, two underground storage tanks, and two energy generation and supply sources.
- Within Block Group 1, Census Tract 7322.01, there are two sources of pollution including one "Tier II" Toxic use reporting facility, and one MassDEP site with AUL. Within Census Tract 1, Census Tract 7322.03, there is one source of pollution identified as a MassDEP site with AUL.
- Within Block Group 1, Census Tract 7323.01, there is one source of pollution identified as an underground storage tank. Within Block Group 1, Census Tract 7323.02, there are six sources of pollution including five M.G.K. c. 21E sites, and one underground storage tank.
- Within Block Group 1, Census Tract 7328.01, there are 12 sources of pollution including two M.G.K. c. 21E sites, four "Tier II" Toxic use reporting facilities, one MassDEP site with AUL, and five underground storage tanks.
- Within Block Group 1, Census Tract 7328.02, there are four sources of pollution including two "Tier II" Toxic use reporting facilities, one MassDEP site with AUL, and one underground storage tank.

- Within Block Group 2, Census Tract 7303, there are ten sources of pollution including two “Tier II” Toxic use reporting facilities, one MassDEP site with AUL, five underground storage tanks, and two EPA facilities.
- Within Block Group 2, Census Tract 7304.01, there are six sources of pollution including two “Tier II” Toxic use reporting facilities, three MassDEP sites with AULs, and one underground storage tank.
- Within Block Group 2, Census Tract 7304.02, there are three sources of pollution including one “Tier II” Toxic use reporting facility, one MassDEP site with AUL, and one underground storage tank.
- Within Block Group 2, Census Tract 7305, there are 18 sources of pollution including one air operating permit, two large quantity toxic user, one M.G.K. c. 21E site, five “Tier II” Toxic use reporting facilities, eight MassDEP sites with AULs, and one energy generation and supply source.
- Within Block Group 2, Census Tract 7316.02, there are eight sources of pollution including four M.G.K. c. 21E sites, one “Tier II” Toxic use reporting facility, and three underground storage tanks.
- Within Block Group 2, Census Tract 7317, there are nine sources of pollution including two M.G.K. c. 21E sites, two “Tier II” Toxic use reporting facilities, two MassDEP sites with AULs, and three underground storage tanks.
- Within Block Group 2, Census Tract 7318.01, there are 21 sources of pollution including one large quantity toxic user, eight M.G.K. c. 21E sites, two “Tier II” Toxic use reporting facilities, seven MassDEP sites with AULs, and three underground storage tanks.
- Within Block Group 2, Census Tract 7319, there is one source of pollution identified as a M.G.K. c. 21E site.
- Within Block Group 2, Census Tract 7320.01, there is one source of pollution identified as a MassDEP site with AUL.
- Within Block Group 2, Census Tract 7320.02, there is one source of pollution identified as a MassDEP public water supplier.
- Within Block Group 2, Census Tract 7322.01, there are eight sources of pollution including one M.G.K. c. 21E site, three “Tier II” Toxic use reporting facilities, one MassDEP site with AUL, and three underground storage tanks.
- Within Block Group 2, Census Tract 7322.02, there are two sources of pollution identified as MassDEP sites with AULs.
- Within Block Group 2, Census Tract 7323.01, there are seven sources of pollution including one M.G.K. c. 21E site, two “Tier II” Toxic use reporting facilities, two MassDEP sites with AULs, and two underground storage tanks.
- Within Block Group 2, Census Tract 7323.02, there are two sources of pollution including one M.G.K. c. 21E site and one underground storage tank. Within Block Group 2, Census Tract 7328.01, there is one source of pollution identified as an underground storage tank.
- Within Block Group 3, Census Tract 7301, there is one source of pollution identified as an underground storage tank. Within Block Group 3, Census Tract 7304.01, there is one source of pollution identified as a “Tier II” Toxic use reporting facility.

- Within Block Group 3, Census Tract 7305, there are 23 sources of pollution including two (large quantity toxic users, two M.G.K. c. 21E sites, three “Tier II” Toxic use reporting facilities, eleven (11) MassDEP sites with AULs, four underground storage tanks, and one EPA facility.
- Within Block Group 3, Census Tract 7320.02, there are 12 sources of pollution including one air operating permit, one large quantity toxic user, seven “Tier II” Toxic use reporting facilities, one underground storage tank, and two energy generation and supply sources.
- Within Block Group 3, Census Tract 7322.03, there are 14 sources of pollution including one large quantity toxic user, two M.G.K. c. 21E sites, four “Tier II” Toxic use reporting facilities, four MassDEP sites with AULs, one underground storage tanks, and two EPA facilities.
- Within Block Group 4, Census Tract 7301, there are eight sources of pollutions including two “Tier II” Toxic use reporting facilities, five MassDEP sites with AULs, and one underground storage tank.
- Within Block Group 5, Census Tract 7302, there is one source of pollution identified as a “Tier II” Toxic use reporting facility.
- Within Block Group 5, Census Tract 7306, there are three sources of pollution including one MassDEP site with AUL, and two underground storage tanks.
- Within Block Group 5, Census Tract 7316.01, there are three sources of pollution including one M.G.K. c. 21E site, one MassDEP site with AUL, and one underground storage tank.

9.2.3 EJ Screen of Environmental Indicators

NEP analyzed Census block groups within the DGA using the EPA EJ Screening Tool (EJ Screen 2.2) to identify existing environmental burdens. EJ Screen 2.2 include 13 “pollution and sources” measures. These include:

- Particulate matter 2.5 (PM 2.5)
- Ozone
- Diesel particulate matter (diesel PM)
- Air Toxics cancer risk
- Air Toxics respiratory hazard index (HI)
- Toxic releases to air
- Traffic proximity
- Lead paint
- Superfund proximity
- Risk Management Plan (RMP) facility proximity
- Hazardous waste proximity
- Underground Storage tanks
- Wastewater discharge

Percentiles are used to provide relative rankings of the measures when compared to other block groups within the Commonwealth. A traditional EJ Screen report cannot be generated for the

route because of its length and complexity. Therefore, EJ Screen's online mapping feature was reviewed to identify pollution and sources ranges along the route. Block groups that have a pollution or source at or above the 50th percentile are outlined in Table 9-4. Pollution or sources not listed in a given municipality are below the 50th percentile for the block groups within the DGA.

9.2.4 Conclusion on Existing Unfair or Inequitable Burdens

In accordance with EJ Protocols, EJ populations with the DGA are "highly likely to be impacted by an unfair or inequitable environmental burden" because there is an "EJ population that is located in a municipality or census tract demonstrating 'vulnerable health EJ criteria,'" However, the Project has no potential to exacerbate any existing unfair or inequitable environmental burdens and will improve the overall reliability of the bulk power transmission system which both EJ and non-EJ communities rely on.

9.3 Analysis of Project Impacts to Determine Disproportionate Adverse Effects

According to the MEPA EJ Protocol, analysis of Project impacts to determine disproportionate adverse effects is required when the Project demonstrates the presence of an existing unfair or inequitable environmental burden on EJ Populations. The analysis of adverse impacts should include a description of the nature and severity of the Project's environmental and public health impacts, and the comparative impact on EJ Populations versus non-EJ Populations within the Project Area. Additionally, this analysis should include a description of any project benefits, including environmental benefits, that improve environmental conditions or the public health of the EJ Population, or otherwise reduce the potential for unfair or inequitable effects on the EJ Population.

9.3.1 Nature and Severity of Project Impact

Following the MEPA EJ Protocol, analysis of whether the nature and severity of project impacts will exacerbate any existing unfair or inequitable environmental or public health burden impacting EJ Populations is required. The magnitude and duration were considered when analyzing the severity of any project impact.

The Project will occur within the existing ROW and within existing off-ROW access roads, thereby minimizing potential adverse environmental impacts to the surrounding areas. Given the nature of the Project, outage constraints in the region, and NEP's efforts to reduce impacts to the natural and human environment, Project activities will be sequenced in both the mainline and tap lines. There will be some permanent impacts as a result of the Project, as described in the previous sections. However, there are no permanent impacts proposed to surface water, groundwater, wetland resources or air quality. Impacts to these resources are temporary and short-term during the construction phase of the Project. Any potential sedimentation impacts, and other short-term construction impacts to wetlands and surface waters, will be mitigated using soil erosion and sediment control BMPs and temporary construction mats to protect wetland soils, vegetation root stock, and streams. To oversee regulatory compliance with permit conditions and proper installation of soil erosion and sediment control BMPs, NEP will elect an Environmental Monitor to conduct weekly inspections during the construction process. Because the nature and severity of Project impacts are minimal on all populations, including EJ Populations, the Project will not materially exacerbate any existing unfair or inequitable environmental or public health burden impacting the EJ populations.

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
Ayer	Traffic Proximity	Block Group 2, Tract 3251.01	Less than 50th percentile
		Block Group 3, Tract 3251.02	
		Block Group 2, Tract 3251.02	
		Block Group 1, Tract 3251.02	51st percentile
	Lead Paint	Block Group 2, Tract 3251.01	Less than 50th percentile
		Block Group 2, Tract 3251.02	
		Block Group 3, Tract 3251.02	72nd percentile
		Block Group 1, Tract 3251.02	51st percentile
	Superfund Proximity	Block Group 2, Tract 3251.01	81st percentile
		Block Group 2, Tract 3251.02	82nd percentile
		Block Group 3, Tract 3251.02	88th percentile
		Block Group 1, Tract 3251.02	87th percentile
	Underground Storage Tanks	Block Group 2, Tract 3251.01	Less than 50th percentile
		Block Group 2, Tract 3251.02	
		Block Group 3, Tract 3251.02	51st percentile
		Block Group 1, Tract 3251.02	54th percentile
	Wastewater Discharge	Block Group 2, Tract 3251.01	93rd percentile
		Block Group 3, Tract 3251.02	99th percentile
		Block Group 1, Tract 3251.02	99th percentile
		Block Group 2, Tract 3251.02	86th percentile
Shirley	Lead Paint	Block Group 1, Tract 3882	Less than 50th percentile
		Block Group 3, Tract 3882	
		Block Group 4, Tract 3882	
		Block Group 2, Tract 3882	84th percentile
	Superfund Proximity	Block Group 1, Tract 3882	67th percentile

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
		Block Group 3, Tract 3882	84th percentile
		Block Group 4, Tract 3882	75th percentile
		Block Group 2, Tract 3882	82nd percentile
	Wastewater Discharge	Block Group 1, Tract 3882	86th percentile
		Block Group 3, Tract 3882	95th percentile
		Block Group 4, Tract 3882	81st percentile
		Block Group 2, Tract 3882	59th percentile
Lancaster	Traffic Proximity	Block Group 1, Tract 3882	56th percentile
	Superfund Proximity	Block Group 1, Tract 3882	72nd percentile
	Wastewater Discharge	Block Group 1, Tract 3882	62nd percentile
Leominster	Underground Storage Tanks	Block Group 1, Tract 7092.04	62nd percentile
	Wastewater Discharge	Block Group 1, Tract 7092.04	61st percentile
Sterling	All Pollution and Sources	All Block Groups	Less than 50th percentile
West Boylston	Traffic Proximity	Block Group 1, Tract 7291	Less than 50th percentile
		Block Group 2, Tract 7291	Less than 50th percentile
		Block Group 2, Tract 7292	58th percentile
	Lead Paint	Block Group 1, Tract 7291	Less than 50th percentile
		Block Group 2, Tract 7291	Less than 50th percentile
		Block Group 2, Tract 7292	63rd percentile
Worcester	PM 2.5	Block Group 1, Tract 7319	50th percentile
		Block Group 1, Tract 7328.01	56th percentile
		All Block Groups	Less than 50th percentile
	Diesel PM	Block Group 1, Tract 7304.02	50th percentile
		Block Group 1, Tract 7319	51st percentile
		All Block Groups	Less than 50th percentile

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
	Traffic Proximity	Block Group 5, Tract 7303	Less than 50th percentile
		Block Group 1, Tract 7302	50th percentile
		Block Group 4, Tract 7301	75th percentile
		Block Group 2, Tract 7303	65th percentile
		Block Group 1, Tract 7301	59th percentile
		Block Group 1, Tract 7303	73rd percentile
		Block Group 1, Tract 7305	93rd percentile
		Block Group 2, Tract 7304.01	89th percentile
		Block Group 1, Tract 7304.02	93rd percentile
		Block Group 1, Tract 7319	96th percentile
		Block Group 3, Tract 7305	89th percentile
		Block Group 1, Tract 7328.01	70th percentile
	Lead Paint	Block Group 1, Tract 7302	Less than 50th percentile
		Block Group 4, Tract 7301	
		Block Group 1, Tract 7301	
		Block Group 2, Tract 7305	
		Block Group 1, Tract 7328.01	
		Block Group 5, Tract 7303	80th percentile
		Block Group 2, Tract 7303	96th percentile
		Block Group 1, Tract 7303	94th percentile
		Block Group 2, Tract 7304.01	65th percentile

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
		Block Group 1, Tract 7304.02	67th percentile
		Block Group 1, Tract 7319	90th percentile
		Block Group 3, Tract 7305	83rd percentile
	Superfund Proximity	Block Group 1, Tract 7328.01	57th percentile
		All Block Groups	Less than 50th percentile
	RMP Facility Proximity	Block Group 1, Tract 7302	Less than 50th percentile
		Block Group 4, Tract 7301	
		Block Group 1, Tract 7304.02	
		Block Group 1, Tract 7319	
		Block Group 1, Tract 7301	60th percentile
		Block Group 2, Tract 7305	54th percentile
		Block Group 5, Tract 7303	52nd percentile
		Block Group 2, Tract 7303	50th percentile
		Block Group 1, Tract 7303	55th percentile
		Block Group 2, Tract 7304.01	50th percentile
		Block Group 3, Tract 7305	57th percentile
		Block Group 1, Tract 7328.01	70th percentile
	Hazardous Waste Proximity	Block Group 1, Tract 7302	Less than 50th percentile
		Block Group 4, Tract 7301	
		Block Group 2, Tract 7303;	
		Block Group 1, Tract 7301	

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
		Block Group 2, Tract 7305	67th percentile
		Block Group 5, Tract 7303	62nd percentile
		Block Group 1, Tract 7303	72nd percentile
		Block Group 2, Tract 7304.01	68th percentile
		Block Group 1, Tract 7304.02	75th percentile
		Block Group 3, Tract 7305	69th percentile
		Block Group 1, Tract 7319	65th percentile
		Block Group 1, Tract 7328.01	60th percentile
	Underground Storage Tanks	Block Group 1, Tract 7302	Less than 50th percentile
		Block Group 5, Tract 7303	
		Block Group 2, Tract 7304.01	
		Block Group 4, Tract 7301	61st percentile
		Block Group 1, Tract 7301	55th percentile
		Block Group 2, Tract 7305	64th percentile
		Block Group 2, Tract 7303	72nd percentile
		Block Group 1, Tract 7303	69th percentile
		Block Group 1, Tract 7304.02	53rd percentile
		Block Group 3, Tract 7305	66th percentile
		Block Group 1, Tract 7319	76th percentile
		Block Group 1, Tract 7328.01	64th percentile
	Wastewater Discharge	Block Group 1, Tract 7302	Less than 50th percentile

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
		Block Group 2, Tract 7303	
		Block Group 1, Tract 7301	
		Block Group 4, Tract 7301	
		Block Group 2, Tract 7305	63rd percentile
		Block Group 5, Tract 7303	52nd percentile
		Block Group 1, Tract 7303	50th percentile
		Block Group 2, Tract 7304.01	55th percentile
		Block Group 1, Tract 7304.02	59th percentile
		Block Group 3, Tract 7305	64th percentile
		Block Group 1, Tract 7319	69th percentile
		Block Group 1, Tract 7328.01	90th percentile
Boylston	Superfund Proximity	Block Group 2, Tract 7181	52nd percentile
Shrewsbury	PM 2.5	Block Group 4, Tract 7395	50th percentile
		Block Group 3, Tract 7395	50th percentile
		Block Group 1, Tract 7392.02	56th percentile
		Block Group 2, Tract 7392.02	54th percentile
		Block Group 1, Tract 7392.01	54th percentile
		Block Group 3, Tract 7391.01	59th percentile
		Block Group 2, Tract 7391.01	59th percentile
		Block Group 1, Tract 7391.01	59th percentile
	Traffic Proximity	Block Group 3, Tract 7391.01	Less than 50th percentile

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
		Block Group 2, Tract 7391.01	
		Block Group 1, Tract 7391.01	
		Block Group 4, Tract 7395	59th percentile
		Block Group 3, Tract 7395	54th percentile
		Block Group 1, Tract 7392.02	68th percentile
		Block Group 2, Tract 7392.02	66th percentile
		Block Group 1, Tract 7392.01	59th percentile
	Superfund Proximity	Block Group 4, Tract 7395	58th percentile
		Block Group 3, Tract 7395	70th percentile
		Block Group 1, Tract 7392.02	66th percentile
		Block Group 2, Tract 7392.02	62nd percentile
		Block Group 1, Tract 7392.01	69th percentile
		Block Group 3, Tract 7391.01	72nd percentile
		Block Group 2, Tract 7391.01	70th percentile
		Block Group 1, Tract 7391.01	70th percentile
	RMP Facility Proximity	Block Group 4, Tract 7395	Less than 50th percentile
		Block Group 3, Tract 7395	
		Block Group 2, Tract 7392.02	54th percentile
		Block Group 1, Tract 7392.02	59th percentile
		Block Group 1, Tract 7392.01	66th percentile
		Block Group 3, Tract 7391.01	72nd percentile

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
		Block Group 2, Tract 7391.01	78th percentile
		Block Group 1, Tract 7391.01	79th percentile
	Hazardous Waste Proximity	Block Group 4, Tract 7395	53rd percentile
		Block Group 3, Tract 7395	Less than 50th percentile
		Block Group 1, Tract 7392.02	60th percentile
		Block Group 2, Tract 7392.02	64th percentile
		Block Group 1, Tract 7392.01	66th percentile
		Block Group 3, Tract 7391.01	72nd percentile
		Block Group 2, Tract 7391.01	78th percentile
		Block Group 1, Tract 7391.01	79th percentile
	Underground Storage Tanks	Block Group 4, Tract 7395	Less than 50th percentile
		Block Group 3, Tract 7395	
		Block Group 1, Tract 7392.02	
		Block Group 2, Tract 7392.02	
		Block Group 1, Tract 7392.01	
		Block Group 3, Tract 7391.01	
		Block Group 2, Tract 7391.01	51st percentile
		Block Group 1, Tract 7391.01	51st percentile
	Wastewater Discharge	Block Group 4, Tract 7395	56th percentile
		Block Group 3, Tract 7395	76th percentile
		Block Group 1, Tract 7392.02	86th percentile

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
		Block Group 2, Tract 7392.02	84th percentile
		Block Group 1, Tract 7392.01	88th percentile
		Block Group 3, Tract 7391.01	90th percentile
		Block Group 2, Tract 7391.01	94th percentile
		Block Group 1, Tract 7391.01	95th percentile
Grafton	PM 2.5	Block Group 1, Tract 7613	59th percentile
		Block Group 3, Tract 7613	59th percentile
		Block Group 2, Tract 7382.01	56th percentile
	Ozone	Block Group 1, Tract 7613	Less than 50th percentile
		Block Group 3, Tract 7613	
		Block Group 2, Tract 7382.01	51st percentile
	Traffic Proximity	Block Group 1, Tract 7613	Less than 50th percentile
		Block Group 2, Tract 7382.01	
		Block Group 3, Tract 7613	76th percentile
	Lead Paint	Block Group 3, Tract 7613	Less than 50th percentile
		Block Group 2, Tract 7382.01	
		Block Group 1, Tract 7613	53rd percentile
	Superfund Proximity	Block Group 1, Tract 7613	72nd percentile
		Block Group 3, Tract 7613	67th percentile
		Block Group 2, Tract 7382.01	60th percentile
	RMP Proximity	Block Group 1, Tract 7613	91st percentile

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
		Block Group 3, Tract 7613	80th percentile
		Block Group 2, Tract 7382.01	70th percentile
	Wastewater Discharge	Block Group 1, Tract 7613	98th percentile
		Block Group 3, Tract 7613	95th percentile
		Block Group 2, Tract 7382.01	94th percentile
Millbury	PM 2.5	Block Group 1, Tract 7371	Less than 50th percentile
		Block Group 2, Tract 7511.01	
		Block Group 3, Tract 7373	54th percentile
		Block Group 1, Tract 7373	54th percentile
		Block Group 2, Tract 7373	54th percentile
	Ozone	Block Group 3, Tract 7373	53rd percentile
		Block Group 1, Tract 7373	53rd percentile
		Block Group 2, Tract 7373	53rd percentile
		Block Group 1, Tract 7371	64th percentile
		Block Group 2, Tract 7511.01	67th percentile
	Superfund Proximity	Block Group 3, Tract 7373	54th percentile
		All Block Groups	Less than 50th percentile
	RMP Proximity	Block Group 1, Tract 7371	Less than 50th percentile
		Block Group 2, Tract 7511.01	
		Block Group 3, Tract 7373	69th percentile
		Block Group 1, Tract 7373	59th percentile

Table 9-4: EJ Screen Environmental Indicators by Percentile

Town	Pollution and Source	Census Block Group	State Percentile
		Block Group 2, Tract 7373	57th percentile
	Hazardous Waste Proximity	Block Group 2, Tract 7373	Less than 50th percentile
		Block Group 1, Tract 7371	
		Block Group 2, Tract 7511.01	
		Block Group 3, Tract 7373	60th percentile
		Block Group 1, Tract 7373	53rd percentile
	Underground Storage Tanks	Block Group 2, Tract 7373	Less than 50th percentile
		Block Group 1, Tract 7371	
		Block Group 1, Tract 7373	
		Block Group 2, Tract 7511.01	
		Block Group 3, Tract 7373	55th percentile
	Wastewater Discharge	Block Group 3, Tract 7373	87th percentile
		Block Group 1, Tract 7373	75th percentile
		Block Group 2, Tract 7373	82nd percentile
		Block Group 1, Tract 7371	88th percentile
		Block Group 2, Tract 7511.01	87th percentile

9.3.2 Potential Environmental and Public Health Impacts and Proposed Mitigation

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

Water Quality

The Project will incorporate protective and preventative measures to minimize and avoid impacts to water quality. The ROW crosses many wetland areas, streams, and rivers including the Wachusett Reservoir which serves as a public water supply to the surrounding areas. To protect water quality and these sensitive areas, temporary roads will be constructed using construction mats to cross wetlands and streams. Construction mats are typically comprised of wooden beams, bolted together, and are typically 4 feet wide by 16 feet long. They are laid temporarily on top of the ground and vegetation. These mats allow heavy machines and vehicles to cross sensitive areas without damaging the soil or roots of vegetation and are also placed in a manner that does not affect the flow of water in streams. These mats will be removed when construction is completed, and the wetlands will be restored. In addition, BMPs, such as the use of straw wattles, silt fencing, stormwater management features, and other control measures, will be used to prevent soil and other material from being transported into wetlands and streams. Using these BMPs, any impacts to water quality will be negligible and temporary and are not anticipated to cause impacts to public health.

Land Protection and Open Space

The Project passes through protected land and open space areas around the Wachusett Reservoir that are maintained by the DCR. Since Project activities will be limited to the existing ROW and access roads, access to Protected Land and Open Space within EJ Populations will not be impacted. Additionally, there are no EJ Populations within DCR Land affected by the Project.

Noise

The EJ Populations that are most likely to have temporary noise impacts are the communities that are directly within or are located near the ROW. The EJ Populations within Worcester have relatively dense development. Additionally, there are a total of 22 EJ Populations spread throughout 6 municipalities including Ayer, Leominster, Worcester, Shrewsbury, Shirley, and Lancaster that are within approximately 100-feet of the Project ROW. Noise impacts associated with construction-period activities are temporary in nature and expected to be minimal. Where construction will occur adjacent to residences, NEP will notify landowners prior to the commencement of work. Noise-generating activities will be conducted in accordance with any local and state requirements and are not anticipated to cause impacts to public health. Within Worcester, the majority of the work will take place adjacent to existing roads and active railroads, reducing the potential for noise impacts on that more densely populated area.

Traffic

Impacts to traffic during the construction of the Project will be minor and intermittent. The work areas will be accessed primarily from NEP-owned access routes or minor town roadways. NEP

will obtain the necessary permits from Massachusetts Department of Transportation (MassDOT) for access. Once on-site, vehicle traffic will be limited to within or in proximity to the ROW. Since the ROW is an un-manned facility, there will be no permanent impacts to traffic patterns or use of existing roadways and no impacts to public health are anticipated from traffic post-construction. Project construction will not impact access to any homes, businesses, or community resources. Temporary road closures or phased traffic management may be required while performing wire stringing activities but will be minimized and coordinated with State or local roadway authorities during the Project's construction. Further, no impacts are anticipated to public transit or to school bus routes.

NEP anticipates two mowing crews, two to four civil (matting and soil erosion controls, road improvements and work pad) construction crews, one foundation crew, four structure/insulator replacement crews & one OPGW wire crew working within the ROW at a given time. Because each of the construction tasks will occur at different times and locations over the course of construction, NEP will not generate significant air emissions within EJ populations in or near the ROW.

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

9.3.3 Comparable Impact on EJ and Non-EJ Populations

The MEPA EJ Protocol states that "the Proponent should also analyze whether the impacts on the EJ population are greater or less than those on non-EJ populations. The purpose of this analysis is to assess whether the Project is adding impacts to an already burdened area in a "targeted" way that is disproportionate when compared to non-EJ populations." Based on the Project footprint, there is no disproportionate impact on EJ Populations within the DGA.

In general, the Project minimizes impacts on the populations in the DGA by working within an existing transmission line corridor. Therefore, the Project will not result in any significant long-term or permanent environmental or public health impacts for any population, including EJ populations. Impacts from construction are only temporary, and proper minimization and mitigation techniques will be implemented where appropriate. Additionally, the Project will not result in any public health impacts to any population. Other impacts, such as temporary impacts to wetlands, will be mitigated through the use of BMPs and will not directly affect any population or affect any populations disproportionately.

9.3.4 Project Benefits

Based on the MEPA EJ Protocol, an analysis of any Project benefits that will improve environmental conditions or the public health of the EJ Population, or otherwise reduce the potential for unfair or inequitable effects on the EJ Populations is required.

An environmental benefit from the Project includes increased resiliency of the overall bulk transmission line system. By improving access throughout the ROW, NEP will be able to respond to future operation and maintenance and emergency needs safely. In addition, the ACR scope of installing improved foundations and upgraded replacement structures will result in infrastructure that is better suited to withstand strong winds and storm events resulting from climate change.

Additionally, the installation of OPGW will allow better communication between substations, resulting in improved response time during storm-related emergencies and outages, which will increase public safety.

Other benefits from the Project include the overall reduction of disturbance to adjacent landowners, wetland resource areas, and rare species habitat over time by planning for the future and reducing the likelihood of multiple repeat projects, thereby reducing environmental impacts, and reducing costs to NEP's customers. The access road improvements and the ACR construction schedules are being coordinated so all of the work can be completed in a series. The replacement of the structures and the installation of OPGW will have the added benefit of allowing more renewable energy resources to connect into the system. Addressing climate change requires a major expansion of renewable energy and the infrastructure necessary to support and deliver that energy. NEP is actively taking steps to ensure that its system is ready to meet this critical challenge. Repairing the existing road base and refurbishing the 313/343 and O141/P142 Lines helps to accomplish this goal. Overall, the Project will improve transmission system infrastructure and comply with comprehensive regional plans for improving electric transmission reliability in New England, for EJ and non-EJ populations alike.

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

As discussed above, short-term construction related impacts are not anticipated to adversely affect EJ Populations as BMPs will be implemented and construction will follow federal, state, and local construction requirements. The Project is not anticipated to result in increased health burdens considered in the vulnerable health criteria. The Project will not result in a new potential pollution source, or negatively impact the environment to further burden the EJ Populations that are affected by current pollution sources. Lastly, there is not a significant disproportionate effect identified as only 38 percent of the Project ROW is located within the EJ Populations, whereas 62 percent of Project ROW is within non-EJ populations. Therefore, it is the opinion of NEP that the Project will not have unfair or inequitable impacts on the EJ Populations within the designated geographic area.

10.0 Analysis of Project Impacts to Determine Climate Change Effect

In accordance with the MEPA EJ Protocol, analysis of Project impacts to determine climate change effects is required when the Project demonstrates the presence of an unfair or inequitable environmental burden on EJ Populations. This section analyzes whether the proposed Project will increase or reduce the effects of climate change on the EJ Populations by considering whether the project is likely to exacerbate the climate risks shown on the RMAT Tool in a manner that affects the identified EJ Populations and considering whether the GHG emissions associated with the Project are likely to affect EJ Populations that use or occupy the Project.

10.1 RMAT Climate Resilience Design Standards Tool

Using the RMAT Tool, NEP reviewed the Project's potential temporary and permanent climate change impacts on EJ Populations (Appendix G). The RMAT Tool provides information on preliminary climate change exposure and risk rating, provides climate resilience design standards for projects with physical assets, and provides guidance for best practices. The RMAT is tasked with monitoring and tracking the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) implementation process, making recommendations to, supporting agencies on plan updates, and facilitating coordination across State government and with stakeholders, including municipalities, and businesses.

The RMAT Tool generates an overarching climate risks analysis based on Project asset impacts. This climate risk analysis identifies whether a project has a "High" risk rating for sea level rise and storm surge, extreme precipitation including urban flooding and riverine flooding, and extreme heat. According to the protocol, a "High" risk rating for these parameters could be an indicator of elevated climate risks for EJ Populations. The results of the RMAT evaluation are provided below in Table 10-1.

Table 10-1: RMAT Climate Design Standards Tool Project Report

Location and Included Municipalities*	Sea Level Rise/Storm Surge	Extreme Precipitation – Urban Flooding	Extreme Precipitation – Riverine Flooding	Extreme Heat
Location 1 (Ayer, Shirley)	Not Exposed	Moderate Exposure	High Exposure	Moderate Exposure
Location 2 (Lancaster, Leominster, Shirley, Sterling)	Not Exposed	Moderate Exposure	High Exposure	Moderate Exposure
Location 3 (Boylston, Sterling, West Boylston)	Not Exposed	Moderate Exposure	High Exposure	Moderate Exposure
Location 4 (Boylston, Grafton, Millbury, Shrewsbury, West Boylston, Worcester)	Not Exposed	High Exposure	High Exposure	High Exposure

Table 10-1: RMAT Climate Design Standards Tool Project Report

Location and Included Municipalities*	Sea Level Rise/Storm Surge	Extreme Precipitation – Urban Flooding	Extreme Precipitation – Riverine Flooding	Extreme Heat
Location 5 (West Boylston, Worcester)	Not Exposed	High Exposure	High Exposure	High Exposure
*See Appendix G to see the locations for each RMAT Report				

Engineering review of climate resiliency and riverine flooding considerations (focused on structures located within areas identified to have a high risk of exposure to urban and riverine flooding) determined that the proposed infrastructure improvements will make the Project assets more resilient to these risks from a 50-year (2 percent) storm event estimated as of 2070.

Because only select structures are being replaced, NEP is limited in its ability to significantly relocate structures or raise foundation elevations. Doing so would cause an uplift[5] of the structures ahead and behind, causing a cascading affect, which would expand the scope of the project beyond what is currently proposed.

The following standard design measures are already incorporated into the Project design that assist in making the Project assets more resilient to climate risk:

Updates to Current Electric and Safety Codes
The existing structures along the 313/343/P142/O141 Lines age back decades. To account for this, the replacement structures are designed to meet current electric and safety codes which are more stringent than the design codes governing the lines' initial design. At a minimum, clearances are being brought up to 1977 CMR standards and, where feasible, are being brought up to current National Electrical Safety Code (NESC) and CMR electrical clearances without creating the previously mentioned cascading replacement effect.

Wood to Steel Design
The Project involves removing the existing wood structures and replacing them with a steel design. The existing wood design has notably less protection from flooding and is generally less resilient than steel. The galvanized steel design will provide significantly better protection from long term infrequent extreme weather event exposure and has greater impact resistance in extreme cases. With a galvanized coating, these steel structures can withstand temporary flooding events and without rusting or sustaining other damage. The steel design will increase the load strength of the structures, therefore making these structures more resilient to climate change.

Concrete Foundation Reveal Design
The Project includes a standardized two-to-three-foot foundation reveal above grade to prevent negative impact on structures while also protecting against slight variations in groundwater levels. The reveal also protects against exposure to water and debris present at grade as result of weather events.

5 An uplift of a structure is when a structure is lifted out of the ground.

Protective Coating

As an added protection measure, direct buried structures will be applied with a protective coating up to one-foot above flood level as an added protection measure. The base flood elevations (BFE) for these structures are provided, if known, in Table 10-2 below.

Table 10-2: Structures within FEMA Floodplain

Line	Structure	Scope of Work	Base Flood Elevation (feet)6
O141S/P142	127	Insulator replacement only; existing structure on steel foundation	417.9
O141S	45	Insulator replacement and shieldwire replacement with OPGW only; existing structure on steel foundation	555
O141	45	Insulator replacement only; existing structure on steel foundation	555
O141N/P142N	68	Insulator replacement and shieldwire replacement with OPGW only; existing structure is a steel lattice tower	N/A
313	67	Phase 2: Replace Wires & Replacement	419
313	66	Phase 2: Replace Wires & Replacement	418
313	38	Phase 2: Replace Wires & Replacement	N/A
313	39	Phase 2: Replace Wires & Replacement	N/A
343	120	Phase 1: Replacement Phase 2: Replace Wires	N/A
343	218	Phase 1: Replacement Phase 2: Replace Wires	268
343	304	Phase 2: Replace Wires & Replacement	N/A
343	199A	Phase 2: Replace Wires & Replacement	N/A
343	121	Phase 2: Replace Wires & Replacement	N/A
343	125	Phase 2: Replace Wires & Replacement	N/A
343	200	Phase 2: Replace Wires & Replacement	N/A

6 Data source is FEMA flood maps. FEMA has not determined the BFE for all Zone As which is why many BFEs are not available.

Table 10-2: Structures within FEMA Floodplain

Line	Structure	Scope of Work	Base Flood Elevation (feet)6
343	201	Phase 2: Replace Wires & Replacement	N/A
343	286	Phase 2: Replace Wires & Replacement	214.7
343	287	Phase 1: Replacement Phase 2: Replace Wires	214.4
343	290	Phase 1: Replacement Phase 2: Replace Wires	213.4
343	305	Phase 2: Replace Wires & Replacement	N/A

Operation and Maintenance Program
As part of NEP practice, the 345 kV Lines get inspected on an approximately five-year cycle. These inspections include the following:

- Exposing structure foundations to check the sub-grade conditions, and
- Inspecting the structures, assemblies, and lines for damages.

With these collective design measures and the ongoing monitoring program, NEP considers the asset to be resilient to riverine flooding risks from a 50-year storm event. The upgrades are a significant improvement compared to the existing conditions and are improved to the extent allowed considering the limited scope of the Project. as an ACR for deteriorating assets only.

NEP will monitor the integrity of the structures and transmission line constructed to ensure the assets remain viable, reliable, and operable during the lifetime of the Project. If it is determined that impacts of climate change pose a greater risk to the transmission line and associated assets, appropriate action will be taken. Should climate change have an unforeseen impact on the Project components or should new advancements in technology be introduced, NEP will take the necessary corrective actions, if needed, to maintain a robust and reliable electric network. These actions would be considered under a separate project only if action is necessary on the transmission structures.

As shown in Table 10-1, with respect to Location 1 in Ayer and Shirley, Location 2 in Lancaster, Leominster, Shirley, and Sterling, and Location 3 in Boylston, Sterling, and West Boylston, the climate design tool determined no exposure to sea level rise, moderate risk for urban flooding and extreme heat, and a high risk for riverine flooding. With respect to riverine flooding, portions of these Project areas are located within a FEMA floodplain but are outside of the Massachusetts Coast Flood Risk Model (MC-FRM). Within Locations 1, 2 and 3, there is no tree removal proposed as part of this Project and therefore the Project is not expected to contribute to an increased risk of extreme heat. Additionally, while some of the Project areas are located with FEMA floodplain and are at a high risk for riverine flooding, the structures have been designed (as described above) to minimize risk from flooding and are more resilient than the current structures along both lines.

With respect to Location 4 in Boylston, Grafton, Millbury, Shrewsbury, West Boylston, and Worcester, and Location 5 in West Boylston and Worcester, the climate design tool determined no exposure to sea level rise and high exposure to urban flooding, riverine flooding, and extreme heat. With respect to urban flooding, Locations 4 and 5 were identified as areas with existing impervious areas between 10 percent and 50 percent. With respect to riverine flooding, Locations 4 and 5 are located within a FEMA floodplain and outside the MC-FRM. With respect to extreme heat, both Location 4 and Location 5 have plenty of impervious areas, which tend to increase the temperature within the area. Additionally, within Locations 4 and 5, there is a very minimal amount of tree clearing (approximately 0.35 acres total) proposed as part of the Project. As mentioned in Section 4.2.5, there is 0.25 acres of tree removal in Grafton and 0.1 acre of tree and brush removal in Worcester. The tree removal in Worcester is located within an EJ Population (BG 2, Census Tract 7323.01) but no adverse impact is expected on that community due the minimal amount of tree removal proposed. While the RMAT Tool identified these locations at high risk of extreme heat, the Project as proposed will not exacerbate that risk. As mentioned for Locations 1, 2 and 3, while some of the Project areas are located with FEMA floodplain and are at a high risk for riverine flooding, the structures have been designed (as described above) to minimize risk from flooding and are more resilient than the current structures along both lines.

10.2 Climate Adaptation

Based on the results from the RMAT Tool, the Project's rating based on the climate parameters for sea level rise, storm surge, and extreme precipitation including urban or riverine flooding were analyzed in relation to EJ Populations.

There will be no significant tree removal as a result of this Project; and, therefore, the Project will not contribute to extreme heat in the area. The Project does not propose to add impervious cover in a manner that worsens flooding conditions in the surrounding neighborhoods that would affect immediate abutters or EJ Populations.

Work within the 100-year flood zone is unlikely to impact flooding conditions. There are 33 EJ Populations within the 100-year (i.e., 1 percent risk) flood zone based on review of available Flood Insurance Rate Maps (FIRMs); most of which are in the City of Worcester. NEP will utilize temporary work pads in floodplains so there is no need for compensatory flood storage.

In addition, the installation of access roads and work pads along the ROW that will support construction will include stormwater BMPs to manage and control stormwater runoff.

As described previously, the Project asset risk to extreme heat was high or moderate within all EJ neighborhoods, per the RMAT tool. There will be limited tree-clearing as a result of this Project, and it is solely located within existing ROW. It is believed that a driver of this risk score is due to the portion of the Project located within City of Worcester which is a dense urban area with extensive impervious cover. In contrast to these minor potential impacts, the Project and the ACR work, in particular, provide substantial benefits through the installation of OPGW which will allow better communication between substations, resulting in improved response time during storm-related emergencies and outages, such as extreme heat events, which are anticipated to increase in frequency due to climate change.

10.3 Riverine Flooding and Mitigation

Table 10-2 identifies the structures that are located within the FEMA floodplain, and the scope of work identified for each.

As stated above, the scope of the Project has considered climate change and resiliency measures, including a focused design on riverine flooding. NEP will monitor the integrity of the structures and transmission line constructed to ensure the assets remain viable, reliable, and operable during the lifetime of the Project. If it is determined that impacts of climate change pose a greater risk to the transmission line and associated assets, appropriate action will be taken.

11.0 Traffic and Transportation

Although there will be a temporary increase in traffic from construction vehicles while construction is underway, there will be no permanent increase in traffic as a result of the Project. In addition, construction will proceed along the ROW as work advances so only select areas will be subject to additional traffic at any given time. Traffic will consist of various vehicle types ranging from pick-up trucks to heavy construction equipment.

Access to the ROW for construction equipment will generally be via previously used routes off public roadways that cross the ROW. In some select locations, adjacent existing off-ROW access roads will be used to access the ROW. These off-ROW access routes are used in locations to avoid constraints at public road crossings of the ROW.

NEP anticipates two mowing crews, two to four civil (matting and soil erosion controls, road improvements and work pad) construction crews, one foundation crew, four structure/insulator replacement crews & one OPGW wire crew working within the ROW at a given time. Because each of the construction tasks will occur within the ROW at different times and locations over the course of construction, NEP does not anticipate an increase in traffic delays.

NEP's will coordinate with MassDOT to develop traffic management plans (TMPs) for any work within or over state highways. TMPs will be developed and submitted for review and approval to MassDOT prior to the start of construction. The TMPs may include strategies such as following traffic management procedures, construction time restrictions, signage and the installation of traffic pads to minimize soils in roadways.

NEP will coordinate with local authorities for work on local streets and roads. At locations where construction equipment will be staged in a public way, the contractor will follow the pre-approved TMP.

12.0 Regulatory Compliance

12.1 Wetland Protection Act

The Massachusetts WPA (Section 40 of Chapter 131 of the General Laws of Massachusetts and regulated under 310 CMR 10.00 defines multiple inland resource areas (310 CMR 10.54-10.59) and gives the MassDEP jurisdiction over these resource areas. In most cases, the WPA also gives MassDEP jurisdiction over buffer zone extending 100 feet from the edge of the resource area. In addition to MassDEP, local municipalities' Conservation Commissions are responsible for administering the WPA and any local wetlands ordinance or bylaw.

The Project has temporary impacts to BVW, Bank, and LUW as a result of construction matting for access. All of these resource areas will be fully restored once construction is complete, thereby restoring all wetland functions and values protected under the WPA. The matting in these resource areas falls under WPA's Utility Maintenance Exemption (310 CMR 10.02(2)(a)(2)). There will be permanent impacts to RA and BLSF for work pads and/or access roads and a minimal amount of BVW impact for structure replacements. The permanent impacts to BVW will be mitigated by preparing and implementing wetland replication plans. Impacts to RA and BLSF are outlined below.

12.1.1 Limited Project Status

310 CMR 10.53(3)(d) allows for the *"construction, reconstruction, operation and maintenance of underground and overhead public utilities such as electrical distribution or transmission lines"* as a limited project.

The access road refresh and permanent work pad construction along the ROW is eligible to proceed under this limited project provision as the work will support the overall improvement of the transmission system infrastructure and reliability in New England. By improving access roads and creating permanent work pads that will support future utility maintenance projects, the Project will provide safe and level access and work areas that will allow NEP to be climate ready by having establish access available to respond in the event of a storm related emergency. The proposed upgrades to existing access roads are located within the existing transmission ROWs, therefore minimizing impact to jurisdictional resource areas. There are no feasible alternative access routes that would have less impact to resource areas than using what currently exists within the ROW and the few off-ROW access routes that NEP hold easements on that help avoid resource impacts.

12.1.2 Riverfront Area

The WPA defines RA (310 CMR 10.58) as the 200-foot area of land measured horizontally from a river's Mean Annual High Water (MAHW) line. The section defines a river as any stream that is perennial and includes, but is not limited to, streams shown as perennial on current USGS maps or that have a watershed size greater than or equal to one square mile. RA is not associated with intermittent streams as they do not flow throughout the year.

There will be impacts to RA as a result of this Project for the road refresh and work pad construction. For the SEIR impact calculations, work pads that do not require grading are considered a temporary impact as they will be restored with vegetation post-construction, using

loam and seed if needed. As the Project design advances and moves into WPA permitting with Conservation Commissions, NEP will work to reduce work pad impacts within RA by minimizing their size or making additional work pads temporary where feasible. In addition, all work pads in RA will be loamed and seeded as needed to foster vegetation restoration. Reestablishing the natural vegetation within the RA is critical to protecting water supplies, providing flood control, preventing pollution and protecting wildlife and fisheries habitat. During the WPA permitting process, NEP will coordinate with Conservation Commissions to develop a final mitigation package that addresses state and local requirements.

12.1.3 Bordering Land Subject to Flooding

The WPA defines BLSF as "an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds, or lakes. It extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland." The boundary of BLSF is further defined as "the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm" as shown on the most recently available flood profile data prepared for the community by the National Flood Insurance Program (NFIP), currently administered by the FEMA, successor to the United States Department of Housing and Urban Development).

There will be impacts to BLSF as a result of this Project for the road refresh and the work pad construction. NEP had originally proposed to make all work pads in BLSF permanent. Since then, NEP has determined that all impacts for work pads within BLSF will be temporary by using timber mats.

The road refresh within BLSF will have no impact on flood storage loss since at most, it is limited to refreshing stone over an existing road. Compensatory flood storage will not be required because roads will either be matted or over-excavated before stone is added so that there no loss of flood storage.

12.2 Massachusetts Endangered Species Act

The MESA (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00) provides for the protection of endangered, threatened, and special concern species and their habitats in Massachusetts. The proposed Project is located in PH and EH and therefore will require review and approval by NHESP under MESA.

NEP filed a draft MESA Checklist in February 2024 and has continued to consult with NHESP on appropriate BMPs and mitigation measures; however at a minimum NEP will follow the NHESP O&M guideline, develop and implement species specific protection plans, conduct turtle trainings with field crews, delineate rare plant locations for avoidance, utilize erosion controls to avoid any sedimentation in rivers, survey for host plants, and avoid work during sensitive dates to the best extent possible. NEP has conducted a turtle habitat assessment as requested by NHESP and will be providing a report to NHESP with a summary of the findings.

12.3 Massachusetts Stormwater Standards

The Project has been designed to comply with the Massachusetts Stormwater Management Standards to the maximum extent possible as a limited project and redevelopment project.

Stormwater conveyance BMPs, including swales, check dams, water bars, and plunge pools, will be primarily used to reduce the potential for washout of the gravel access areas.

Permanent work pads will be finished with a crushed stone and or gravel. Work pads in ACECs, RA, WsPA lands, Article 97 lands and NHESP PH will be topped with loam and then seeded as needed to restore vegetation. The Project will not add impervious area and is not anticipated to have a significant impact to hydrology along the ROW. Rather, by controlling the run-on to and runoff from the constructed access and work pads and allowing it to recharge into the ROW ground surface in a controlled manner, the Project is meeting the intent of the Massachusetts Stormwater Handbook and the provisions of 310 CMR 10.05(6)(k) through (q). NEP will prepare a Stormwater Checklist for inclusion in the NOI filings for the Project.

The Project does not involve land uses with higher potential pollutant loads. During construction, NEP will implement BMPs in the SWPPP that will be required under the EPA Construction General Permit.

12.4 DCR Watershed Protection Act

The aim of the WsPA is to regulate land uses within the watersheds of drinking water supplies to protect the quality of the water that is treated and distributed by the Massachusetts Water Resources Authority. In accordance with 313 CMR 11.09, NEP will have adequate provisions in place during construction activities to prevent erosion from leading to a degradation of water quality.

NEP will implement BMPs in accordance with the SWPPP and EG-303NE (Appendix C) to protect water quality in the Wachusett Reservoir watershed. These BMPs include the use of erosion controls at the limits of disturbance and installing construction mats in wetlands within the Wachusett Reservoir watershed on top of geotextile fabric to prevent sediment from falling between the gaps in the mats and into the resource area. No direct work within streams or waterbodies within the Wachusett Reservoir watershed is proposed. Permanent work pads in areas that fall under the jurisdiction of the WsPA will either be made temporary or will be loamed and seeded as needed so vegetation is restored.

DCR and NEP had a meeting on March 26, 2024, to discuss the Project, impacts within DCR land, and proposed mitigation measures. DCR identified their main concerns and plans to work with NEP to mitigate the impacts within DCR land to the greatest extent practicable. NEP will file a Request for Advisory Opinion and a Construction Access Permit with DCR and continue to consult with DCR to determine what additional measures may be needed to minimize the chance of any sediment from construction activities from reaching the Wachusett Reservoir.

12.5 Chapter 91 Public Waterfront Act

The Chapter 91 Public Waterfront Act (Chapter 91) and its implementing regulations (310 CMR 9.00) seek to protect the public's right to access and utilize waterways and tidelands. Chapter 91 geographic jurisdiction includes non-tidal rivers or streams on which public funds have been expended either upstream or downstream within the river basin, except for any portions not normally navigable during any season by any vessel. Great ponds, which are defined as ponds that are greater than 10 acres in size in their natural state, are also regulated under Chapter 91.

The ROW traverses several navigable rivers and great ponds (Pout Pond, Flint's Pond & Lake Quinsigamond) that are subject to Chapter 91.

There are 31 streams and rivers, two ponds and one lake along the Project ROW that are presumptively subject to Chapter 91. The limit of Chapter 91 jurisdiction is the ordinary high-water mark, which has been added to the legend on the Access Plans (Figure 2, Appendix A). The Project work associated with the transmission line crossings of jurisdictional ponds, streams and rivers is exempt from licensing as maintenance under 310 CMR 9.05(3)(a) and 9.22(1). All jurisdictional crossings are either licensed (see Table 12-1 below) or qualify as exempt under 310 CMR 9.05(3)(c) and (f) because the transmission lines were originally constructed in 1929 (O141/P142) or 1969 (Line 313/343) and the crossings have not undergone unauthorized structural alterations since January 1, 1984. The construction mats used to span certain streams (Pages 2, 4, 6, 12, 13, 14, 17, 22, 24, 31, 32, 33, 34, 41, 42, 44, 57, 58, 83, Figure 2, Appendix A), are a temporary construction best management practice directly associated with maintenance activities associated with the transmission lines. This maintenance work is required under 310 CMR 9.22(1), which expressly states that "no application for license or license amendment shall be required for such activity."

Table 12-1: Summary Of Applicable Licenses

Number	Licensee	License Date	License Number	Municipality	Waterway	Line	Year Constructed	License Approved Use	Water Activity
88-0106	NEW ENGLAND POWER COMPANY	May 23, 1988	1846	SHREWSBURY	LAKE QUINSIGAMOND (FLINT POND)	P142/O141	1929	Utility Line Reconstruction and Relocation	Utilities
88-0107	NEW ENGLAND POWER COMPANY	May 23, 1988	1847	BOYLSTON	POUT POND	P142/O141	1929	Utility Line Reconstruction and Relocation	Utilities
89-0101	NEW ENGLAND POWER COMPANY	June 7, 1989	1993	BOYLSTON	POUT POND	313/343 P142/O141	1929	Utility Line Construction	Utilities
89-0102	NEW ENGLAND POWER COMPANY	June 7, 1989	1994	GRAFTON	BLACKSTONE RIVER (FLINT POND)	313/343 P142/O141	1929	Utility Line Construction	Utilities

12.6 Clean Water Act

Section 404 of the federal CWA (33 U.S.C. 1251) regulates the discharge of dredged or fill material into waters of the United States. The United States Army Corps of Engineers (USACE) administers the Section 404 permitting program in conjunction with the EPA. The Project includes the temporary discharge of fill material within "Waters of the United States within the Commonwealth" and will seek coverage under the Massachusetts General Permits for authorization under Section 404 of the federal CWA through a Pre-Construction Notification (PCN) filing with the USACE. Accordingly, an Individual 401 Water Quality Certification (IWQC) is required from MassDEP.

12.6.1 Pre-Construction Notification

The Project requires a PCN under General Permit (GP) 6 for *Utility Line Activities*, and General Permit 24 for *Temporary Construction Access and Dewatering* due to the Project involvement the placement of temporary construction timber mats in vernal pools, as specified in General Condition 28: *Vernal Pools.*

12.6.2 Individual 401 Water Quality Certification

The Project is located within the vicinity of the Wachusett Reservoir which is designated as an ORW. The Project includes the replacement of shield wire, and associated appurtenances on numerous structures located in wetlands within the Wachusett Reservoir watershed. These activities trigger an Individual 401 WQC for the entirety of the Project. Additionally, placement of temporary timber construction mats (i.e. timber mats) will be required to complete the work in wetlands and for stream crossings, which is considered temporary fill. This Project is deemed a Major Fill/Excavation Project (BRP WW 10) because it may lead to:

> *"a loss of any amount of vegetated wetland or land under water involving outstanding resource waters, rare species in an isolated vegetated wetland, salt marsh, an individual 404 permit, or activities where MassDEP invokes discretionary authority pursuant to 314 CMR 9.04(11) to require an application for an individual water quality certification."*

In addition to the proposed work in an ORW, the required PCN filing with the USACE also triggers the need for an Individual 401 WQC.

13.0 Mitigation and Section 61 Findings

This section provides a draft template for Section 61 Findings pursuant to the Secretary's Environmental Notification Form (ENF) Certificate and in accordance with G.L. c. 30, § 61, which states: “Any determination made by any agency of the Commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact.”

Mitigation is a means of offsetting potential adverse effects of human activity on the environment. The development of mitigation measures has become an integral part of the regulatory process and of conservation planning efforts. Most state legislation requiring mitigation measures does not prescribe the specific mitigation activity that must take place, and mitigation can take many forms, including the following:

- Avoiding an impact by not taking an action or redirecting/relocating an action;
- Minimizing an impact by limiting the degree of action taken;
- Restoring, rehabilitating, or repairing the affected environment;
- Preservation and maintenance activities to reduce or eliminate the impacts over time; and/or
- Providing replacement or substitute resources or environments.

NEP is incorporating elements of these approaches in its overall mitigation plan to comprehensively address potential impacts associated with the Project. MEPA requires state agencies to make findings on environmental damage and mitigation measures - so-called Section 61 Findings - before issuing a state permit for a Project requiring an EIR (*301 CMR 11.07*). The MEPA regulations at *301 CMR 11.07(6)(k)* require that the EIR contain the proposed Section 61 Findings. In accordance with this requirement, NEP’s proposed Section 61 Findings for the Project are also presented herein.

The proposed Section 61 Findings for those issues involving the following state agencies, actions and/or statutory requirements include:

- MassDEP – Section 401 Individual WQC
- NHESP – MESA Checklist;
- DCR – Construction Access Permit and WsPA Request for Advisory Opinion
- MEPA Interim Protocol on EJ.
- MassDOT

The access plans provided in Figure 2, Appendix A depict the maximum extent of the area that will be graded for the work pads. The impacts summarized below reflect this as well and already represent a significant reduction from the initial impact calculations, which originally used assumptions that would have provided maximum flexibility during construction. NEP continues to work with construction to determine ways to reduce impacts specifically to environmentally sensitive areas. A summary of all the currently proposed mitigation, parties responsible for implementation and schedule are provided in Table 13-1 below. The Draft Findings following Table 13-1 outline the potential impacts from the Project and associated mitigation proposed.

Table 13-1: Summary of Currently Proposed Mitigation, Responsible Party and Schedule

Mitigation Measure and/or BMP	Lead Agency	Responsible Party/Implementation	Schedule
Land Alteration			
Erosion and sediment controls will be installed and maintained. A SWPPP will be developed outlining BMPs that will be utilized during construction to address potential impacts. Stormwater will be managed during construction through the use of erosion controls and good housekeeping practices.	MEPA/DCR	NEP Transmission Line Services/Contractor	Construction phase
Post-construction stormwater will be managed by stabilizing all disturbed surfaces and installing roadside swales and water bars where needed.		NEP Transmission Line Services/Contractor	Post-construction phase
Tree removals will be limited to a few select areas where wire pulls are required. Approximately 0.6-acres of tree-removal for the entire Project.		NEP Forestry Division	Construction phase
Work pads that fall under the jurisdiction of the Watershed Protection Act will be matted or loamed and seeded post-construction as needed to restore vegetation.		NEP Transmission Line Services/Contractor	Post-construction phase
Wetlands & Waterways			
Develop and implement four wetland replication plans for 900 square-feet of permanent wetland impact from structure replacements.	MassDEP/Conservation Commissions	NEP Licensing & Permitting/Contractor	Design phase
Install, inspect, and maintain temporary soil erosion and sediment controls, and other applicable construction BMPs, around work sites in or near wetlands to minimize the potential for erosion and sedimentation, mark the limits of wetlands, and restrict crew access, as appropriate.		NEP Transmission Line Services/Contractor	Construction phase
NEP will not construct any permanent work pads in wetlands. All work pads in wetlands will be temporarily matted with construction mats, which will be removed post-construction so the wetland vegetation can be restored.		NEP Transmission Line Services/Contractor	Construction phase

Table 13-1: Summary of Currently Proposed Mitigation, Responsible Party and Schedule

Mitigation Measure and/or BMP	Lead Agency	Responsible Party/Implementation	Schedule
NEP will not construct any permanent roads in wetlands. All access routes through wetlands will be temporarily matted with constructional mats, which will be removed post-construction so the wetland vegetation can be restored.		NEP Transmission Line Services/Contractor	Construction phase
Construction equipment will be refueled (apart from equipment that cannot practically be moved) 100 feet or more from a wetland. If refueling must occur within a wetland, secondary containment will be provided.		NEP Transmission Line Services/Contractor	Construction phase
Stream crossings will be temporary. Streams will be spanned using construction mats that are laid so they do not impact the hydrology or the bed of the stream. Streams will be bridged with mats so they do not block stream flow.		NEP Transmission Line Services/Contractor	Construction phase
Work pads in BLSF will be temporary and will be restored to existing grade once work is completed.		NEP Transmission Line Services/Contractor	Construction phase
Word pads in Riverfront will be matted or loamed and seeded post-construction as needed to restore vegetation.		NEP Transmission Line Services/Contractor	Post-construction phase
Rare Species			
NEP will avoid and/or minimize impacts to Orange Sallow Moth by conducting a survey for its host plant within the applicable sections of the ROW.	NHESP	NEP botanist	Pre-construction phase
NEP will avoid impacts to Whippoorwill by conducting earth disturbing activities outside the Time-of-Year restriction.		NEP Transmission Line Services/Contractor	Construction phase
NEP will avoid impacts to Common Loon by avoiding work in its Priority Habitat.		NEP Transmission Line Services/Contractor	Construction phase
NEP has completed a habitat assessment of Wood and Blanding's Turtle and is consulting with NHESP to develop a plan to avoid and minimize impacts to habitat for these two species.		NEP Licensing & Permitting	Design phase

Table 13-1: Summary of Currently Proposed Mitigation, Responsible Party and Schedule

Mitigation Measure and/or BMP	Lead Agency	Responsible Party/Implementation	Schedule
Work pads in NHESP Priority Habitat will be matted or loamed and seeded post-construction as needed to restore vegetation.		NEP Transmission Line Services/Contractor	Post-construction phase
ACECs			
NEP will continue to consult with DCR to develop a mitigation package for work in ACECs.	DCR	NEP Licensing & Permitting	Design phase
Erosion and sediment controls will be installed and maintained. A SWPPP will be developed outlining BMPs that will be utilized during construction to address potential impacts. Stormwater will be managed during construction through the use of erosion controls and good housekeeping practices.		NEP Transmission Line Services/Contractor	Construction phase
Work pads in ACECs will be matted or loamed and seeded post-construction as needed to restore vegetation.		NEP Transmission Line Services/Contractor	
Cultural Resources			
Work pads in culturally sensitive areas will not be graded or have any ground disturbance. NEP will implement an ASAPP at other sensitive locations.	MHC	NEP Transmission Line Services/Contractor	Construction phase
NEP continue to consult with MHC and the THPOs throughout the Project.		NEP Licensing & Permitting	Design & Construction phase
Construction Period & Hazardous Waste			
Work will be completed in accordance with EG-303, EG-501, EG-502, and EG-1707 which describe NEP's procedures for managing hazardous waste and contaminated soils, and NEP's spill response procedures.	MassDEP	NEP Transmission Line Services/Contractor	Construction phase
If oil and/or hazardous material are identified during the implementation of this Project, notification will be made to MassDEP, if necessary.		NEP Transmission Line Services/Contractor	Construction phase

Table 13-1: Summary of Currently Proposed Mitigation, Responsible Party and Schedule

Mitigation Measure and/or BMP	Lead Agency	Responsible Party/Implementation	Schedule
NEP will manage soil and groundwater in accordance with MCP in areas along the ROW that are AULs or known concentrations of PFAS.		NEP Transmission Line Services/Contractor	Construction phase
Vehicles and equipment will be brought to an access area greater than 100 feet away from sensitive environmental features for refueling.		NEP Transmission Line Services/Contractor	Construction phase
Public Health & Environmental Justice			
NEP will notify CBOs of this SEIR filing and let them know how they can provide comment.	MEPA	NEP Licensing & Permitting	Pre-construction phase
NEP will continue to update the Project website as the Project advances.		NEP Licensing & Permitting	Pre-construction phase
Dust controls will be evaluated and implemented as needed throughout the duration of the Project on all disturbed soils that are subject to surface dust movement and dust blowing.		NEP Transmission Line Services/Contractor	Construction phase
Diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above to be used for 30 or more days over the course of Project construction will have USEPA-verified (or equivalent) emission control devices, such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) installed on the exhaust system side of the diesel combustion engine. Vehicle idling will be minimized in accordance with Massachusetts' Anti-idling law, M.G.L. c. 90, § 16A, c. 111, §§ 142A – 142M, and 310 CMR 7.11. NEP requires the use of ultra-low sulfur diesel fuel in its diesel-powered construction equipment and limits idling time to five minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts.		NEP Transmission Line Services/Contractor	Construction phase

Table 13-1: Summary of Currently Proposed Mitigation, Responsible Party and Schedule

Mitigation Measure and/or BMP	Lead Agency	Responsible Party/Implementation	Schedule
Climate Change			
Structures that are being replaced in floodplain are going from wood to steel. Wood structures have notably less protection from flooding. Steel will provide significantly better protection from long term infrequent extreme weather event exposure and has greater impact resistance.	MEPA	NEP Transmission Line Engineering	Design Phase
Galvanized steel structure design can withstand flooding events and will not rust or cause damage.	MEPA	NEP Transmission Line Engineering	Design Phase
NEP will monitor the integrity of the structures and transmission line to ensure the assets remain viable, reliable, and operable during the lifetime of the Project. If it is determined that impacts of climate change pose a greater risk to the transmission line and associated assets, appropriate action will be taken.		NEP Transmission Line Engineering	Post-Construction
Should climate change have an unforeseen impact on the Project components or should new advancements in technology be introduced, NEP will take the necessary corrective actions, if needed, to maintain a robust and reliable electric network.		NEP Transmission Line Engineering	Post-Construction
Upgrades to infrastructure, e.g., insulators, will allow the system to handle greater electrical loads during heat waves.		NEP Transmission Line Engineering	Design Phase
Installation of OPGW will improve communication among substations and transmission system assets.		NEP Transmission Line Engineering	Design Phase

13.1 MassDEP

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

PROPOSED FINDING PURSUANT TO M.G.L., c. 30, § 61

PROJECT NAME: Line 313/343/O141/P142 ACR and Access Road Improvement Project

PROJECT LOCATION: Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury

PROJECT PROPONENT: New England Power Company

EEA NUMBER: To be determined

INTENT OF THESE SECTION 61 FINDINGS: MEPA regulations 301 CMR 11.12(5) stipulate that in "accordance with G.L. c.30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the Section 401 Water Quality Certification sought from the Massachusetts Department of Environmental Protection.

PROJECT DESCRIPTION: NEP is proposing to perform access road improvements and construction of permanent work pads within existing ROW to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.

In addition to providing long-term, safe and reliable access, the access road improvements will be utilized to immediately support two separate NEP maintenance projects within this ROW which are the Line O141/P142 ACR Project which involves replacing structures and OPGW, and Line 313/343 ACR Project which involves replacing structures and installing OPGW in two phases.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Work at approximately 296 structures on the 313/343 and O141/P142 Lines including structure replacements and conducting other miscellaneous maintenance (install OPGW, replace insulators, repair grounding, etc.)

- Reestablish access roads and construct permanent work pads on the 313/343 and O141/P142 Lines.

MEPA HISTORY: Pursuant to G.L. c. 30, §61- §62A-H, of the MEPA and its implementing regulations at 301 CMR 11.00, the Proponent (NEP) has prepared and submitted this Single Environmental Impact Report (SEIR). The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- EIR for Land because there is direct alteration of 25 or more acres of land (301 CMR 11.03(1)(b)(1))
- ENF and Other Review for NHESP because there is greater than two acres of disturbance of designated priority habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern (301 CMR 11.03(2)(b)(2))
- ENF and Other Review for ACEC because the Project is within ½ or more acres within a designated ACEC (301 CMR 11.03(11)(b))
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).
- EIR: Wetlands, Waterways & Tidelands: Alteration of one or more acres of bordering vegetated wetland. (301 CMR 11.03(3)(a)(1)(a)

PROJECT IMPACTS AND MITIGATION: Refer to Table 13-2 for a list of impacts and corresponding mitigation relative to water quality. NEP will be responsible for providing the mitigation measures below. The schedule and cost of these measures is still to be determined. In addition, NEP is continuing to work with MassDEP to develop further mitigation measures and options to this mitigation to the extent it can help ensure minimal impacts to the water quality operation.

Table 13-2: Water Quality Related Mitigation

Category	Impact	Mitigation Measures
BVW	Temporary alterations during construction; permanent fill for structure installation	Use construction mats for access through wetlands, across streams and other sensitive areas to minimize compression of soils, rutting, and disturbance of vegetation. Temporary impacts only. Implement SWPPP and measures in the 401 Individual Water Quality Certification.
BLSF	Temporary alteration of floodplain for access and some permanent impact for work pad grading.	Restore areas temporarily impacted with loam and seed as needed. Compensatory flood storage will not be needed as all work pads in BLSF will be temporary. Roads will either be matted or over-excavated before stone is added so there will be no loss of flood storage. Employ temporary erosion controls (e.g., silt fence, hay/straw bales, filter socks, mulching, temporary and/or

Table 13-2: Water Quality Related Mitigation

Category	Impact	Mitigation Measures
		permanent reseeding) and sedimentation controls, as appropriate.
RA	Permanent impact to Riverfront Area for access and work envelopes.	Restore areas temporarily impacted. Work pads will be loamed and seeded post-construction as needed to restore vegetation. Employ temporary erosion controls (e.g., silt fence, hay/straw bales, filter socks, mulching, temporary and/or permanent reseeding) and sedimentation controls, as appropriate.
Bank	Temporary impact to bank due to access and work envelopes. In most cases, construction mat crossing will span the Bank of rivers and stream; however, the potential for alteration has been accounted for in the Project impact calculations.	Use construction mats to minimize compression of soils, rutting, and disturbance of vegetation. Temporary impact only.
LUW	Temporary impact to LUW for access, work envelopes and pull pads.	Use construction mats to minimize compression of soils, rutting, and disturbance of vegetation. Temporary impacts only.
Environmental Inspections	No impacts.	NEP will employ a qualified environmental inspector to ensure that construction activities follow the requirements of federal, state, and local permits and approvals. Inspections will occur at least once per week and after rain threshold is reached in accordance with the SWPPP.
Construction Activity	Areas surrounding the Project may be subject to construction noise and obstructions during work hours.	Typical daily construction hours are expected to be from 7:00 a.m. to 4:00 p.m., Monday through Friday. Contractors will be encouraged to reuse or recycle construction and demolition debris to the maximum extent possible.

FINDINGS: Based on its review of the MEPA documents, the permit application, public comments, and applicable regulations, MassDEP finds the terms and conditions to be incorporated into the permits required for the Project and the mitigation commitments set forth in the attached Table A will constitute all feasible measures to avoid damage to water quality and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to MassDEP authority. Appropriate conditions consistent with this Section 61 Finding are included in the Section 401 Individual WQC issued by the Department to describe more fully and ensure implementation of said measures.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY	**DATE**

13.2 NHESP

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS

MASSACHUSETTS NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM

PROPOSED FINDING PURSUANT TO M.G.L., c. 30, § 61

PROJECT NAME: Line 313/343/O141/P142 ACR and Access Road Improvement Project

PROJECT LOCATION: Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury

PROJECT PROPONENT: New England Power Company

EEA NUMBER: To be determined

PERMIT: MESA Checklist; To be determined

INTENT OF THESE CHAPTER 61 FINDINGS: MEPA regulations 301 CMR 11.12(5) stipulate that in "accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the Determination Letter sought from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife under 321 CMR 10.23.

PROJECT DESCRIPTION: NEP is proposing to perform access road improvements within existing ROW to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.

In addition to providing long-term, safe, and reliable access, the access road improvements will be utilized to immediately support two separate NEP maintenance projects within this ROW which are the Line O141/P142 ACR Project which involves replacing structures and OPGW, and Line 313/343 ACR Project which involves replacing structures and installing OPGW in two phases.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Work at approximately 296 structures on the 313/343 and O141/P142 Lines including structure replacements and conducting other miscellaneous maintenance (install OPGW, replace insulators, repair grounding, etc.)
- Reestablish access roads and construct permanent work pads on the 313/343 and O141/P142 Lines.
-

MEPA HISTORY: Pursuant to G.L. c. 30, §61- §62A-H, of the Massachusetts Environmental Policy Act (MEPA) and its implementing regulations at 301 CMR 11.00, the Proponent (NEP) has prepared and submitted this Single Environmental Impact Report (SEIR). The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- EIR for Land because there is direct alteration of 25 or more acres of land (301 CMR 11.03(1)(b)(1))
- ENF and Other Review for NHESP because there is greater than two acres of disturbance of designated priority habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern (301 CMR 11.03(2)(b)(2))
- ENF and Other Review for ACEC because there the Project is within ½ or more acres within a designated ACEC (301 CMR 11.03(11)(b))
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).
- EIR: Wetlands, Waterways & Tidelands: Alteration of one or more acres of bordering vegetated wetland. (301 CMR 11.03(3)(a)(1)(a)

PROJECT IMPACTS AND MITIGATION: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on transmission ROWs. These procedures ensure that this Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and will continue to complete a constructability review along the Project Route to determine access routes and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within sensitive resources to the greatest extent practicable. NEP is working closely with NHESP to develop mitigation measures for each species.

At this time, NEP is exploring mitigation measures that may include the following:

- Land Preservation;
- Habitat restoration;
- Work pads in NHESP Priority Habitat will be loamed and seeded post-construction as needed to restore vegetation;

- Species specific protection plans;
- Time of year restrictions;
- Protective fencing and enclosures;
- Extensive “sweeps” and monitoring during construction;
- Training for construction personnel; and
- Funding for conservation research.

FINDINGS: Based on its review of the MEPA documents, the permit application, public comments, and applicable regulations, NHESP finds the terms and conditions to be incorporated into the permits required for the Project and the mitigation commitments set forth in the attached Table A will constitute all feasible measures to avoid damage to rare species and their habitats and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to NHESP authority. Appropriate conditions consistent with this Section 61 Finding are included in the MESA Checklist issued by the Department to describe more fully and ensure implementation of said measures.

NATURAL HERITAGE ENDANGERED SPECIES PROGRAM

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BY **DATE**

13.3 DCR

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS

MASSACHUSETTS DEPARTMENT OF CONSERVATION & RECREATION

PROPOSED FINDING PURSUANT TO M.G.L., c. 30, § 61

PROJECT NAME: Line 313/343/O141/P142 ACR and Access Road Improvement Project

PROJECT LOCATION: Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury

PROJECT PROPONENT: New England Power Company

EEA NUMBER: To be determined

PERMIT: Construction Access Permit; Watershed Protection Act Advisory Ruling

INTENT OF THESE SECTION 61 FINDINGS: MEPA regulations 301 CMR 11.12(5) stipulate that in "accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the Construction Access Permit and Watershed Protection act Advisory Ruling sought from the Massachusetts DCR.

PROJECT DESCRIPTION: NEP is proposing to perform access road improvements within existing ROW to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.

In addition to providing long-term, safe, and reliable access, the access road improvements will be utilized to immediately support two separate NEP maintenance projects within this ROW which are the Line O141/P142 ACR Project which involves replacing structures and OPGW, and Line 313/343 ACR Project which involves replacing structures and installing OPGW in two phases.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Work at approximately 296 structures on the 313/343 and O141/P142 Lines including structure replacements and conducting other miscellaneous maintenance (install OPGW, replace insulators, repair grounding, etc.)
- Reestablish access roads and construct permanent work pads on the 313/343 and O141/P142 Lines.

MEPA HISTORY: Pursuant to G.L. c. 30, §61- §62A-H, of the MEPA and its implementing regulations at 301 CMR 11.00, the Proponent (NEP) has prepared and submitted this Single Environmental Impact Report (SEIR). The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- EIR for Land because there is direct alteration of 25 or more acres of land (301 CMR 11.03(1)(b)(1))
- ENF and Other Review for NHESP because there is greater than two acres of disturbance of designated priority habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern (301 CMR 11.03(2)(b)(2))
- ENF and Other Review for ACEC because there the Project is within ½ or more acres within a designated ACEC (301 CMR 11.03(11)(b))
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).
- EIR: Wetlands, Waterways & Tidelands: Alteration of one or more acres of bordering vegetated wetland. (301 CMR 11.03(3)(a)(1)(a)

PROJECT IMPACTS AND MITIGATION: Refer to Table 13-3 for a list of impacts and corresponding mitigation relative to DCR Land. NEP will be responsible for providing the mitigation measures below. The schedule and cost of these measures is still to be determined. In addition, NEP is continuing to work with DCR to develop further mitigation measures and options to this mitigation to the extent it can help ensure minimal impacts to DCR Land.

Table 13-3: DCR Related Mitigation

Category	Impact	Mitigation Measures
Restoration	Construction activity will cause ground disturbance.	Once work has been completed, all areas shall be stabilized, managed, and reseeded where applicable and erosion control devices shall then be removed. Work pads will be loamed and seeded post-construction as needed to restore vegetation on DCR lands.
Soil Management/ Stormwater	Potential for erosion and sedimentation impact during construction.	Erosion and sedimentation control management measures will be installed and properly maintained by NEP construction contractor to reduce erosion and retain sediment on site during and after construction. NEP contractor will install and maintain erosion and sediment control measures during construction.
Environmental Inspections	No impacts.	NEP will employ a qualified environmental inspector to ensure that construction activities follow the requirements of

Table 13-3: DCR Related Mitigation

Category	Impact	Mitigation Measures
		federal, state, and local permits and approvals. Inspections will occur at least once per week or more frequently as warranted.
Construction Activity	Areas surrounding the Project may be subject to construction noise and obstructions during work hours.	Typical daily construction hours are expected to be from 7:00 a.m. to 4:00 p.m., Monday through Friday. Contractors will be encouraged to reuse or recycle construction and demolition debris to the maximum extent possible.

FINDINGS: Based on its review of the MEPA documents, the permit application, public comments, and applicable regulations, DCR finds the terms and conditions to be incorporated into the permits required for the Project and the mitigation commitments set forth in the attached Table A will constitute all feasible measures to avoid damage to DCR Land and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to DCR authority. Appropriate conditions consistent with this Section 61 Finding are included in the Construction Access Permit issued by the Department to describe more fully and ensure implementation of said measures.

DEPARTMENT OF CONSERVATION AND RECREATION

_____ _____

BY **DATE**

13.4 EOEEA

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS

ENVIRONMENTAL JUSTICE

PROPOSED FINDING PURSUANT TO M.G.L., c. 30, § 61

PROJECT NAME: Line 313/343/O141/P142 ACR and Access Road Improvement Project

PROJECT LOCATION: Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury

PROJECT PROPONENT: New England Power Company

EEA NUMBER: To be determined

PERMIT: Environmental Justice

INTENT OF THESE SECTION 61 FINDINGS: MEPA regulations 301 CMR 11.12(5) stipulate that in "accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the MEPA Interim Protocol for Analysis of Environmental Justice (EJ) Impacts, which implements requirements related to the content of Environmental Impact Reports (EIRs) as set forth in Section 58 of the Act.

PROJECT DESCRIPTION: NEP is proposing to perform access road improvements within existing ROW to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.

In addition to providing long-term, safe, and reliable access, the access road improvements will be utilized to immediately support two separate NEP maintenance projects within this ROW which are the Line O141/P142 ACR Project which involves replacing structures and OPGW, and Line 313/343 ACR Project which involves replacing structures and installing OPGW in two phases.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Work at approximately 296 structures on the 313/343 and O141/P142 Lines including structure replacements and conducting other miscellaneous maintenance (install OPGW, replace insulators, repair grounding, etc.)
- Reestablish access roads and construct permanent work pads on the 313/343 and O141/P142 Lines.
-

MEPA HISTORY: Pursuant to G.L. c. 30, §61- §62A-H, of the MEPA and its implementing regulations at 301 CMR 11.00, the Proponent (NEP) has prepared and submitted this Single Environmental Impact Report (SEIR). The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- EIR for Land because there is direct alteration of 25 or more acres of land (301 CMR 11.03(1)(b)(1))
- ENF and Other Review for NHESP because there is greater than two acres of disturbance of designated priority habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern (301 CMR 11.03(2)(b)(2))
- ENF and Other Review for ACEC because there the Project is within ½ or more acres within a designated ACEC (301 CMR 11.03(11)(b))
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).
- EIR: Wetlands, Waterways & Tidelands: Alteration of one or more acres of bordering vegetated wetland. (301 CMR 11.03(3)(a)(1)(a)

PROJECT IMPACTS AND MITIGATION: Refer to Table 13-4 for a list of impacts and corresponding mitigation relative to Environmental Justice. NEP will be responsible for providing the mitigation measures below. The schedule and cost of these measures is still to be determined. In addition, NEP is continuing to work with EOEEA to develop further mitigation measures and options to this mitigation to the extent it can help ensure minimal impacts to Environmental Justice populations.

Table 13-4: Section 61 Findings for EJ Impacts

Category	Impact	Mitigation Measures
Traffic	Traffic impacts during construction	Impacts to traffic during the construction of the project will be minor and intermittent. The work areas will be accessed primarily from NEP-fee owned or NEP easement. NEP will obtain the necessary permits from MassDOT for access. Once on-site, vehicle traffic will be limited to within or in proximity to the ROW. Since the ROW is an un-manned facility, there will be no permanent impacts to traffic patterns or use of existing roadways and no impacts to public health are anticipated from traffic.

Table 13-4: Section 61 Findings for EJ Impacts

Category	Impact	Mitigation Measures
		Mats or other appropriate measures (e.g., sweeping) will be used, when necessary, to reduce mud deposition from equipment crossing roadways.
Sensitive Receptors	Temporary construction-related impacts include traffic disruption, and noise.	NEP will manage in-street construction to maintain full access for emergency, ambulance and/or fire service.
Water Quality		Temporary roads will be constructed using construction mats. Construction mats are typically comprised of wooden beams, bolted together, and are typically 4 feet wide by 16 feet long. They are laid temporarily on top of the ground and vegetation. These mats allow heavy machines and vehicles to cross sensitive areas without damaging the soil or roots of vegetation and are also placed in a manner that do not affect the flow of water in streams. These mats will be removed when construction is completed, and the wetlands will be restored. NEP will also use BMPs such as the use of straw wattles, silt fencing, stormwater management features, and other control measures will be used to prevent soil and other material from being transported into wetlands and streams.
Land Protection and Open Space	No Impact	Project activities will be located within existing ROW.
Noise -	Short-term impacts will result from noise-producing construction activities.	Construction is anticipated to be limited to typical work hours (7:00 a.m. to 4:00 p.m.). Where construction will occur adjacent to residences, NEP will notify landowners prior to the commencement of work. Noise-generating activities will be conducted in accordance with any local and state requirements and are not anticipated to cause impacts to public health.
Safety	Construction activities may impact public safety.	NEP is committed to safety, protecting the environment, preventing accidents/incidents, and maintaining the highest standards for the refurbishment of the access roads. NEP accomplishes these goals by posting emergency contact information for the Project near the access gates and designing the access drives to accommodate emergency vehicles.

FINDINGS: Based on its review of the MEPA documents, the permit application, public comments, and applicable regulations, EOEEA finds the terms and conditions to be incorporated into the permits required for the Project and the mitigation commitments set forth in the attached Table A will constitute all feasible measures to avoid damage to EJ populations and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to EOEEA authority. Appropriate conditions consistent with this Section 61 Finding are included in the

Certificate issued by the EOEEA Secretary to describe more fully and ensure implementation of said measures.

EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

BY **DATE**

13.5 MassDOT

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION

PROPOSED FINDING PURSUANT TO M.G.L., c. 30, § 61

PROJECT NAME: Line 313/343/O141/P142 ACR and Access Road Improvement Project

PROJECT LOCATION: Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury

PROJECT PROPONENT: New England Power Company

EEA NUMBER: To be determined

PERMIT: Highway Access Permit

PROJECT DESCRIPTION: NEP is proposing to perform access road improvements within existing ROW to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.

In addition to providing long-term, safe, and reliable access, the access road improvements will be utilized to immediately support two separate NEP maintenance projects within this ROW which are the Line O141/P142 ACR Project which involves replacing structures and OPGW, and Line 313/343 ACR Project which involves replacing structures and installing OPGW in two phases.

Comprehensive inspections have identified structures and wires are in need of replacement due to asset condition and aging infrastructure and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, in order to extend asset life, the following activities are proposed:

- Work at approximately 296 structures on the 313/343 and O141/P142 Lines including structure replacements and conducting other miscellaneous maintenance (install OPGW, replace insulators, repair grounding, etc.)
- Reestablish access roads and construct permanent work pads on the 313/343 and O141/P142 Lines.

MEPA HISTORY: Pursuant to G.L. c. 30, §61- §62A-H, of the MEPA and its implementing regulations at 301 CMR 11.00, the Proponent (NEP) has prepared and submitted this Single Environmental Impact Report (SEIR). The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- EIR for Land because there is direct alteration of 25 or more acres of land (301 CMR 11.03(1)(b)(1))
- ENF and Other Review for NHESP because there is greater than two acres of disturbance of designated priority habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern (301 CMR 11.03(2)(b)(2))
- ENF and Other Review for ACEC because there the Project is within ½ or more acres within a designated ACEC (301 CMR 11.03(11)(b))
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b)).
- EIR: Wetlands, Waterways & Tidelands: Alteration of one or more acres of bordering vegetated wetland. (301 CMR 11.03(3)(a)(1)(a)

PROJECT IMPACTS AND MITIGATION: Refer to Table 13.5 for a list of impacts and corresponding mitigation relative to transportation on state roadways. NEP will be responsible for providing the mitigation measures below. The schedule and cost of these measures is still to be determined. In addition, NEP is continuing to work with MassDOT and the municipalities to develop further mitigation measures and options to this mitigation to the extent it can help ensure safety and minimize traffic disruption.

Table 13-5: Summary of Proposed Traffic and Safety Mitigation

Category	Impact	Mitigation Measures
Traffic	Traffic impacts during construction at access points to ROW near state roadways.	Several construction techniques are being considered for traffic mitigation on roads where the project area intersects. NEP will continue to evaluate and will choose the construction technique that minimizes impacts to traffic. Appropriate traffic management and signage will be established, and necessary safety measures will be developed in compliance with applicable permits for work in public roadways. Arrangements will be made with local officials to have traffic safety personnel on-hand during periods of construction. NEP will provide appropriate signage and safety measures to warn drivers of the work taking place in the area and coordinate with the towns and MassDOT to help inform motorists and minimize impacts.

FINDINGS: Based on its review of the MEPA documents, the permit application, public comments, and applicable regulations, MADOT finds the terms and conditions to be incorporated into the permits required for the Project and the mitigation commitments set forth in the attached Table A will constitute all feasible measures to avoid traffic impacts and will minimize and mitigate such impacts to the maximum extent practicable for those impacts subject to MADOT authority. Appropriate conditions consistent with this Section 61 Finding are included in the Construction

Access Permit issued by the Department to describe more fully and ensure implementation of said measures.

MASSACHUSETTS DEPARTMENOF TRANSPORTATION

BY **DATE**

14.0 Responses to Comments

The following table has been prepared in response to comments received on the EENF filing.

Name	Date Received	Comment Number	Comment	Comment Summary	Response
MassDOT	1/22/2024	1A	The Project route will intersect with the state jurisdictional highway layout at multiple locations. Project-related construction in these locations will require a temporary access permit for construction activities and/or a utility access permit to be issued by MassDOT District 3. Further MassDOT permits will be required for temporary construction access, overhead wire crossings, and new access roadway and/or improvements proposed within the state highway ROW. Additionally, MassDOT District 3 will require details for any access road tie-ins to roads falling under state jurisdiction.	Temporary access permit for construction activities and/or a utility access permit from MassDOT District 3	NEP will consult with MassDOT District 3 for a Temporary Access Permit for Project activities related to state jurisdictional highways and will provide details for any access road tie-ins to roads falling under state jurisdiction. Please see Section 1.3 for an Updated Permit List with the current status of each application for the Project.
MassDOT	1/22/2024	1B	Once completed, the Project is not expected to result in additional vehicle trips on an average weekday, except for the occasional or yearly maintenance activities. MassDOT does not anticipate that these activities would significantly impact the transportation system and therefore recommends no further review for environmental impacts on the state transportation system. The Proponent should coordinate with MassDOT District 3 to minimize traffic disruption during Project construction and prevent impacts on state jurisdictional roadways. If you have any questions regarding these comments, please contact William.M.Simon@dot.state.ma.us.	Coordinate with MassDOT District 3 to minimize traffic disruption during Project construction / prevent impacts on state jurisdictional roadways	NEP will consult with MassDOT District 3 to minimize traffic disruption and prevent impacts to state jurisdictional roadways. NEP will coordinate with MassDOT to develop traffic management plans (TMPs) for any work within or over state highways. Please see Section 10.3 for more information regarding traffic and transportation.
MASS DCR	1/22/2024	2A	Based upon review of the submitted EENF and plans, it appears that this project may meet the criteria for an exemption as stated in 313 CMR 11.05(11) for "Maintenance of Public Utilities." DCR requests that the Proponent contact Bernadette DeBlander to discuss the filing of a Request for Determination of Applicability and to request a Temporary Access Permit for the DCR Wachusett Reservoir Region Office.	Contact Bernadette DeBlander for discussion of filing RDA / request Temporary Access Permit from DCR Wachusett Reservoir Region Office	NEP has consulted Bernadette DeBlander to discuss the filing of a RDA and has pulled together a draft application. NEP will request a Construction Access Permit from DCR Watchusett Reservoir Region Office.
MASS DCR	1/22/2024	2B	DCR also requests that the Proponent review plans to identify options for blocking certain access areas to potential use by All-Terrain Vehicles and motorized dirt bikes.	Identify options for blocking access areas to use by All-Terrain Vehicles / motorized dirt bikes	NEP will consider options for blocking access areas for use of unauthorized All-Terrain Vehicles / motorized dirt bikes in areas where landowner agreements allow for it. The main option currently under consideration is to add boulders adjacent to existing gates to reduce access.
MASS DEP	1/22/2024	3A	The Proponent will be required to submit NOIs for proposed work within wetland resource areas and Buffer Zone, to the Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury Conservation Commissions (the "Commissions"), and MassDEP. Upon receipt of the NOI filings, MassDEP may provide project-specific comments to the Commissions and the Proponent as part of the File Number Issuance Notification Letters.	NOI submittal for wetland resource area / buffer zone activities with MassDEP and ConComs from Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, Millbury	NEP will submit NOI's to the town's Conservation Commissions listed as well as MassDEP. NEP has determined that an RDA will be accepted in Worcester, given the limited scope of work in Worcester.

Name	Date Received	Comment Number	Comment	Comment Summary	Response
MASS DEP	1/22/2024	3B	A 401 Water Quality Certification will be required from MassDEP for the Project. The Proponent should verify whether a 401 Water Quality Variance will also be required for work resulting in the discharge of dredged or fill material into wetlands within Outstanding Resources Waters (“ORWs”) (314 CMR 9.06(3)) within the Wachusett Reservoir watershed in Boylston, West Boylston, and Sterling, or within 400 feet of the Wachusett Reservoir, a Class A surface water (314 CMR 9.06(4)). As tributaries to the Wachusett Reservoir, all wetlands within the easement between the Boylston/West Boylston town line and Kendall Hill Road in Sterling are ORWs.	401 Water Quality Certification required - verify if 401 water quality variance will be required for work resulting in the discharge of dredged or fill material into wetlands within ORW's withing the Wachusett Reservoir watershed	NEP will be filing an Individual 401 Water Quality Certification for the Project and has determined that a variance is not required. Although the Project includes the discharge or dredged or fill material within ORWs, the work does not require a variance per 314 CMR 9.06(3)(c) for the maintenance, repair, replacement or reconstruction of an existing utility line. In addition, the Project does not require any discharge of dredged or fill material within 400-feet of the ordinary high water line of the Wachusett Reservoir. See Section 5.2.3 for more information.
MASS DEP	1/22/2024	3C	MassDEP requests that the Proponent provide additional information related to wetland resource area and BZ impacts; compliance with performance standards for work in Bank, BVW, BLSF, RA, and LUW; wetland restoration; and stormwater management in subsequent MEPA and in the respective NOI filings.	Additional information needed for work in wetland resource areas, bank, BVW, BLSF, RA, LUW, wetland restoration and stormwater management	NEP will comply with performance standards for work in Bank, BVW, LUW, BLSF and RA please see Section 12.0 of the SEIR narrative.

Name	Date Received	Comment Number	Comment	Comment Summary	Response
MASS DEP	1/22/2024	3D	The Proponent should quantify proposed temporary and permanent impacts to existing vegetated areas and non-vegetated areas; depict the location of BLSF and associated compensatory flood storage based on surveyed elevations rather than GIS overlays; identify if any access roadways are proposed within new locations and whether any existing access roadways will be abandoned or restored to vegetated conditions; discuss if the upgraded access roads will result in increased use of the easement by unauthorized off-road vehicles, leading to additional damage to wetland resource areas and BZ; describe long-term maintenance requirements for the work pads; and submit Wildlife Habitat Evaluations for impacts to Bank, BVW, LUW, BLSF, and RA.	Quantify temporary and permanent impacts to existing vegetated areas and non-vegetated areas, depict location of BLSF and compensatory flood storage (based on survey elevation), identify new access roadways or existing access roadways that will be abandoned, describe long term maintenance conditions to work pads and submit Wildlife Habitat Evaluations for impacts to Bank, BVW, LUW, BLSF and RA	Please note that the existing access road system is being improved and has limited or no vegetation over an existing gravel base at the surface. Otherwise, all other areas within the ROW are assumed to be vegetated. Please see Land Use section for a break-out of impacts by land cover type. No existing access roads are proposed to be abandoned and no new access roads are proposed. There is no plan for long-term maintenance of work pads beyond periodic inspections to check for erosion issues, which would be addressed by NEP. Since filing the EENF, NEP has decided to make all work pads within BLSF temporary. NEP will refresh exising access roads with gravel in BLSF, which will have no impact on flood storage capacity as roads would first be over-excavated before placing stone. NEP is preparing Wildlife Habitat Evaluations under the WPA to identify typical wildlife habitat features that occur along the Project ROW and how those features will be impacted by the proposed work. These Wildlife Habitat Evaluations will be included as attachments to the Notice of Intents (NOIs) that are being filed for the Project.
MASS DEP	1/22/2024	3E	If culvert replacements or extensions are required due to the widening of access roads, the Proponent should demonstrate that the crossings meet the Massachusetts Stream Crossing Standards to the maximum extent practicable according to the criteria found in 310 CMR 10.53(8).	Stream Crossing Standards need to be followed to the maximum extant possible under 310 CMR 10.53(8)	No culvert replacements are planned for this Project.

Name	Date Received	Comment Number	Comment	Comment Summary	Response
MASS DEP	1/22/2024	3F	The EENF states, “Where grading of work pads is proposed in sensitive areas and where feasible, NEP will either remove stone so that the size of the permanent work pad will be reduced by 50% or portions of the work pad will be loamed and seeded for restoration while still allowing for future operation and maintenance accessibility.” MassDEP encourages the Proponent to continue its assessment of ways to reduce the size of the permanent work pads proposed within BLSF, RA, and BZ. In addition, the Proponent should confirm whether new access roads and work pads shown within existing active agricultural areas on the Access Plans will be permanent or temporary. When demonstrating compliance with performance standards for work within RA, the Proponent should include work pads, new access roads, and expanded road widths as new degraded areas. MassDEP requests that offsite mitigation and/or restoration of onsite degraded areas be evaluated to compensate for conversion of vegetated areas to degraded areas.	Continue to reduce size of permanent work pads within BLSF, RA and BZ. Confirm access roads and work pads within active agricultural areas as permanent or temporary. Offsite mitigation and onsite restoration should be evaluated to compensate for conversion of vegetated areas to degraded areas	NEP conducted four additional field reviews with the Project team to evaluate ways to limit the size of permanent work pads withing BLSF, RA and BZ, confirm permanent or temporary roads/work pads within active agricultural areas and evaluate mitigation and restoration efforts to compensate for conversion of vegetated areas to degraded areas. The results of these field reviews are reflected on the Access Plans included with the SEIR and in Sections 4.2 and 5.2. Work pads and roads on agricultural lands will be temporary. Work pads in ACECs, NHESP, Riverfront and WsPA lands will be loamed and seeded as needed to restore vegetation after construction is completed.
MASS DEP	1/22/2024	3G	The Massachusetts Stormwater Standards (the “Standards”) apply to this Project, and the limited project status of the Project does not allow the Standards to be met only to the "maximum extent possible” as stated by the Proponent in the EENF. However, much of the Project qualifies as redevelopment, and the Proponent should demonstrate that all redeveloped areas meet the Standards to the maximum extent practicable following the criteria in Volume 2, Chapter 3 of the Massachusetts Stormwater Handbook. The Project will impact 306 acres, and each permanent work pad will be 10,000-12,500 square feet in size. Although work pads, new sections of access road, and widening of access roads will not result in significant forest clearing, many acres of shrub/herbaceous vegetation will be permanently converted to gravel, potentially resulting in an increase in the temperature of surface water runoff, reduction in wildlife habitat, and a decrease in carbon sequestration. The Proponent should show Coldwater Fisheries on the Access Plans and evaluate potential impacts to Coldwater Fisheries and other Critical Areas when demonstrating compliance with the Standards.	Show Cold Water Fisheries on the Access Plans and evaluate impacts to Coldwater Fisheries and other Critical Areas when demonstrating compliance with the Standards.	NEP will prepare Stormwater Checklists for inclusion in the NOI filings to demonstrate compliance with the Stormwater Standards. The Access Plans included with the SEIR have been updated to include coldwater fisheries.
MASS DEP	1/22/2024	3H	Section 61 Findings included in the EENF only commit to mitigation measures already required to achieve compliance with Wetlands Protection Act and Water Quality Certification regulations. MassDEP requests that the Proponent expand the mitigation measures to include mitigation for the large areas of vegetation and soil that will be replaced with gravel throughout the Project, and specifically within BLSF, RA, and BZ.	Expand mitigation measures to include mitigation for large areas of vegetation and soil that will be replaces with gravel throughout the Project, specifically within BLSF, RA and BZ	NEP will provide mitigation for large areas of vegetation and soil that will be replaced with gravel by loaming and seeding all work pads in RA as needed to restore vegetation and making all work pads in BLSF temporary.

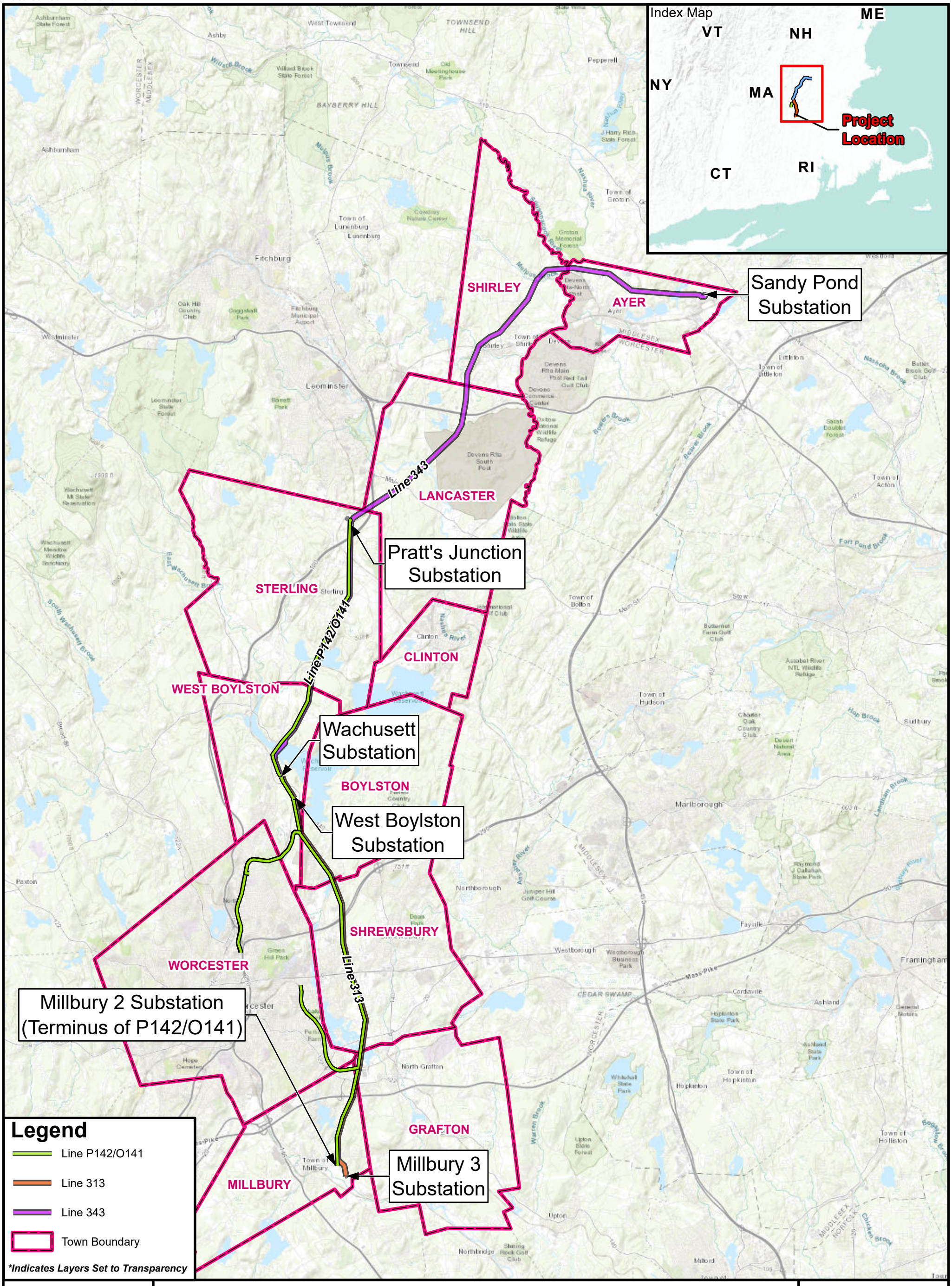
Name	Date Received	Comment Number	Comment	Comment Summary	Response
MASS DEP	1/22/2024	3I	According to the EENF, there are 50 21E listed sites and 96 AULs within one mile of the Project areas. The Proponent should have an LSP available to evaluate potential contamination in the work areas.	LSP available to evaluate potential contamination in the work areas	NEP will have an LSP available to evaluate potential contamination in work areas. Refer to Section 8.0 for more information.
MASS DEP	1/22/2024	3J	The Proponent is advised that excavating, removing and/or disposing of contaminated soil, pumping of contaminated groundwater, or working in contaminated media must be done under the provisions of MGL c.21E (and, potentially, c.21C) and OSHA and may require the submittal of a Release Abatement Plan or to be conducted as a Phase IV Remedial Action. Excavating contaminated soil or pumping contaminated groundwater could be considered response actions under the MCP. Particular attention should be made at the Sandy Pond Substation (RTN 2-0016886) where a release of mineral oil dielectric fluid to soil and groundwater occurred. This site also has an Activity and Use Limitation (AUL).	Work related to contaminated media must be done under provisions of MGL c. 21E (and potentially, c. 21C) and OSHA may require submittal of a Release Abatement Plan or to be conducted as a Phase IV Remedial Action. This site also has an Activity and Use Limitation (AUL)	NEP ensures that any work related to excavating, removing and/or disposing of contaminated soil, pumping of contaminated groundwater, or working in contaminated media will be done under provisions of MGL c 21E (and potentially c 21C). NEP will also submit a Release of Abatement Plan for this portion of the Project. Please refer to Section 8.0 for more information.
MASS DEP	1/22/2024	3K	If oil and/or hazardous materials are identified during the implementation of this Project, notification to MassDEP may be required pursuant to M.G.L. c. 21E and the MCP. A Licensed Site Professional (LSP) should be retained to determine if submittals to MassDEP are required to conduct the work or if notification is required. The BWSC may be contacted for guidance if questions arise regarding contaminated material.	LSP determination of submittals to MassDEP if hazardous materials/oil is identified during implementation of project	NEP will have an LSP available to determine if submittals to MassDEP are required to conduct work or if notification is required . Please refer to Section 8.0 for more information.
MASS DEP	1/22/2024	3L	If dewatering activities are to occur at a site with contaminated groundwater, or in proximity to contaminated groundwater where dewatering can draw in the contamination, a plan must be in place to properly manage the groundwater and ensure site conditions are not exacerbated by these activities. Due to the detection of per- and poly-fluoroalkyl substances (PFAS) in groundwater near the Spectacle Pond municipal drinking water well on Spectacle Pond Road (RTN 2-20964) and the tire recycling facility at 43 Willow Road (RTN 2-17951) in Ayer, evaluation of PFAS, and other site related contaminants as necessary, should be conducted if dewatering is performed in areas that could be affected by releases from these sites.	If dewatering activities are to occur at a site w/ contaminated groundwater, a plan must be in place to manage groundwater and ensure site conditions are not exacerbated by the activities. Evaluate for PFAS and other contaminants if dewatering is performed in areas that could be affected by releases from these sites	NEP will develop and implement a Groundwater Management Plan aimed at evaluating for PFAS and other contaminants if dewatering is performed in areas that could be affected by releases from these sites. Refer to Section 8.0 for more information.

Name	Date Received	Comment Number	Comment	Comment Summary	Response
MASS DEP - Waterways Regulation Program	1/22/2024	4A	The project site includes a number of waterways subject to Chapter 91 jurisdiction. A table in the EENF lists four DEP licenses for utility line construction, relocation, reconstruction, and maintenance, for lines originally constructed in 1929 and 1969 and relocated and reconstructed in 1988 and 1989 (License Nos. 1846, 1847, 1993, 1994). The Proponent states that there may be additional applicable Chapter 91 licenses which it will research further.	Chapter 91 licenses - potentially additional licenses, need to research	The Project work associated with the transmission line crossings of jurisdictional streams and rivers is exempt from licensing as maintenance under 310 CMR 9.05(3)(a) and 9.22(1). All jurisdictional crossings are either licensed (see Table 12-1) or qualify as exempt under 310 CMR 9.05(3)(c) and (f) because the transmission lines were originally constructed in 192 9 (O141/P142) or 1969 (Line 313/343) and the crossings have not undergone unauthorized structural alterations since January 1, 1984.
MASS DEP - Waterways Regulation Program	1/22/2024	4B	The Asset Refurbishment may qualify for maintenance under 310 CMR 9.22(1), as noted in the EENF. However, there are several locations in the project site where temporary construction mats span a stream in order to perform the line refurbishment work. This can be seen on several of the Access Plans, but no detailed plans showing the construction mats relative to Ordinary High Water are included with the EENF. The Wetlands, Waterways, and Tidelands section of the EENF indicates 1.4 acres of temporary impact to Land under Water. Detailed plans that include the High Water Mark, which is the Chapter 91 jurisdictional boundary for the navigable portions of non-tidal rivers and streams, will be necessary for the Department to determine if licensing is required for that scope of work. The Proponent is encouraged to submit plans with the necessary Chapter 91 information with the Environmental Impact Report. Consultation with the Department is also encouraged for a full review of the scope of work as it relates to Chapter 91 licensing.	Detailed plans that include the High Water Mark, which is the Chapter 91 jurisdictional boundary for the navigable portions of non-tidal rivers and streams, will be necessary for the Department to determine if licensing is required for that scope of work. The Proponent is encouraged to submit plans with the necessary Chapter 91 information with the Environmental Impact Report. Consultation with the Department is also encouraged for a full review of the scope of work as it relates to Chapter 91 licensing.	The Ordinary High Water Mark has been added to the Access Plans (Figure 2, Appendix A). The Project work associated with the transmission line crossings of jurisdictional streams and rivers is exempt from licensing as maintenance under 310 CMR 9.05(3)(a) and 9.22(1). All jurisdictional crossings are either licensed (see Table 12-1) or qualify as exempt under 310 CMR 9.05(3)(c) and (f) because the transmission lines were originally constructed in 192 9 (O141/P142) or 1969 (Line 313/343) and the crossings have not undergone unauthorized structural alterations since January 1, 1984.

Name	Date Received	Comment Number	Comment	Comment Summary	Response
MASS DFW & NHESP	1/22/2024	5A	Based on the information submitted and in advance of a formal filing pursuant to the MESA, the Division cannot determine whether the Project as proposed in the EENF can be sufficiently conditioned to avoid a prohibited Take (321 CMR 10.18(2)(b)) of state-listed species habitats. If the Division determines the project will result in a Take of state-listed species, then the project may only be permitted if they meet the performance standards for a Conservation and Management Permit (CMP; 321 CMR 10.23). In order for a project to qualify for a CMP, the applicant must demonstrate that the project has avoided, minimized and mitigated impacts to state-listed species consistent with the following performance standards: (a) adequately assess alternatives to both temporary and permanent impacts to the state listed species, (b) demonstrate that an insignificant portion of the local population will be impacted, and (c) develop and agree to carry out a conservation and management plan that provides a long-term net benefit to the conservation of the state-listed species.	Project may be permitted only if it meets performance standards for a Conservation and Management Permit (CMP; 321 CMR 10.23). Project must avoid, minimize and mitigate impacts to state-listed species consistent with performance standards: A.) adequately assess alternatives to both temporary and permanent impacts to the state listed species, (B.) demonstrate that an insignificant portion of the local population will be impacted, and (C.) develop and agree to carry out a conservation and management plan that provides a long-term net benefit to the conservation of the state-listed species.	Since filing the EENF, NEP has submitted a draft MESA checklist to NHESP and met virtually with NHESP on March 27, 2024, to review and discuss any concerns. NHESP identified that stand-alone turtle protection plans for Wood Turtle & Blanding's Turtle will be needed, including a habitat assessment continues to consult with NHESP to determine if a CMP will be required for the Project. If it is determined that a CMP will be required, NEP will ensure that all performance standards are met in order to receive a CMP for the Project. Please refer to Section 6.0 for more information.

Appendix A: Figures

Figure 1: Site Location Map
Figure 2: Access Plans
Figure 3: DCR Lands
Figure 4: Environmental Justice Areas Map
Figure 5: Other Pollutant Sources Map



LINE 313/343 & P142/O141 PROJECTS, MILLBURY TO AYER

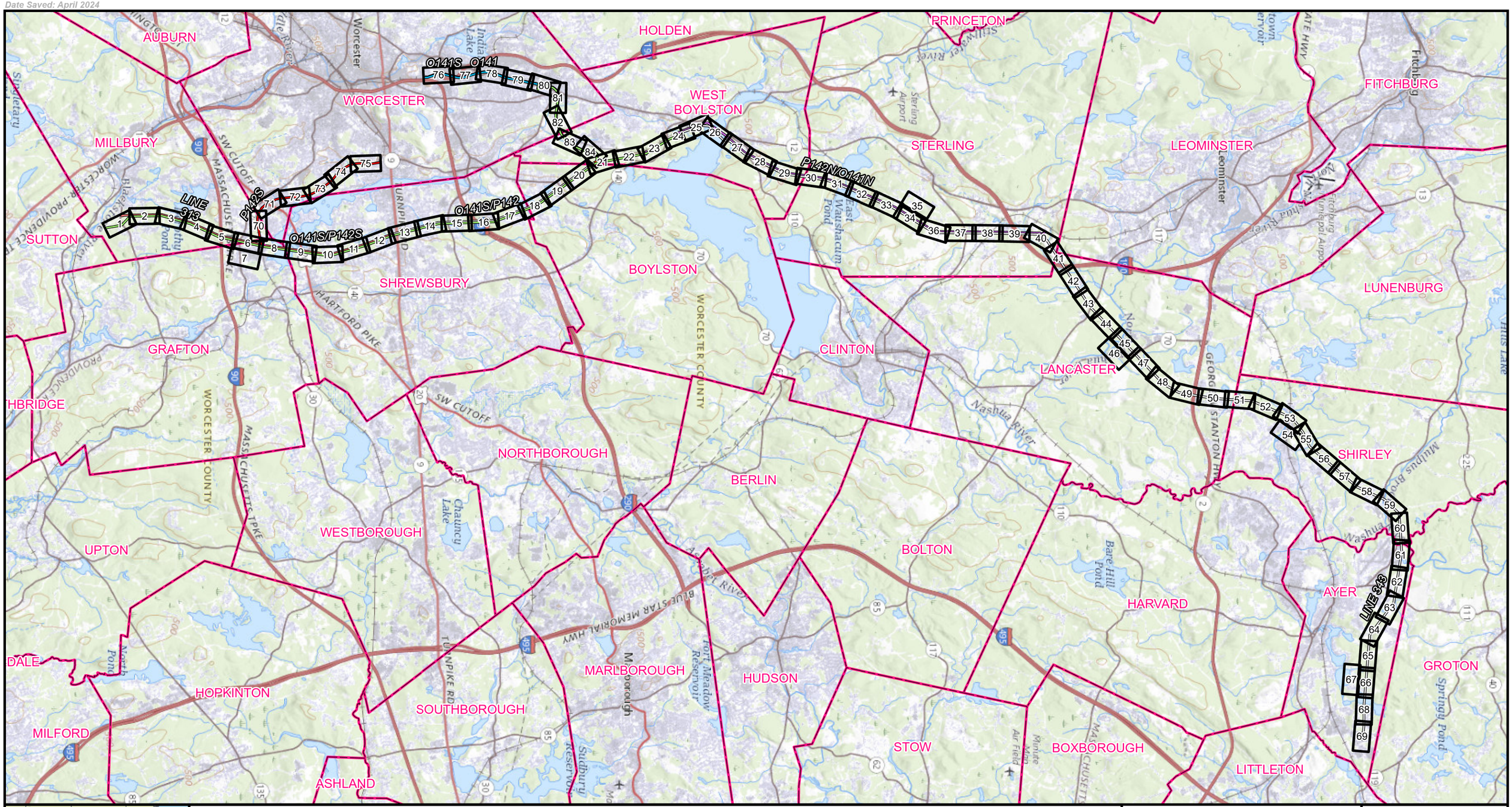
USGS OVERVIEW

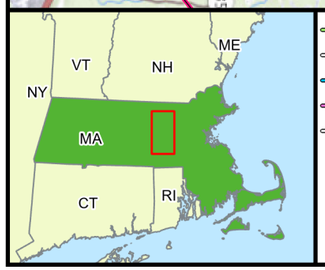
Figure 1

Sources: ESRI, MA DEP, NGRRID, USGS

nationalgrid

Map Produced By TRC





- LINE 313
- LINE 343
- O141
- O141S
- O141S/P142
- O141S/P142S
- O141W
- O142/O141W
- P142N/O141N
- P142S
- PROPOSED CONNECTION - LINE O141/P142
- PAGE GUIDE
- TOWN BOUNDARY

N

1 inch = 10,000 Feet

0 10,000 20,000

Feet

LINE 313/343 & O141/P142

ACCESS PLANS

WORCESTER AND MIDDLESEX COUNTIES, MA

FIGURE 2

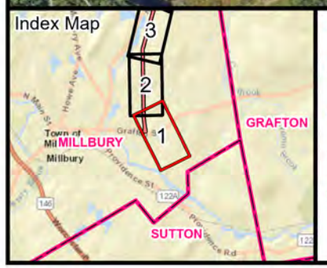
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: USGS National Map

nationalgrid

TRC

MILLBURY 3 SUBSTATION
MILLBURY SUBSTATION
CROSS STREET
GRAFTON STREET
JONATHAN AVENUE
MILLBURY
185S (O141S)
185 (P142S)
184
183
7
6
5
4
3
2
1
W-MJR-20
W-MJR-21
W-MJR-22
W-MJR-23
S-MJR-8
W-JGB-30
W-JGB-31
W-gar-1
V-MBF-1
W-MBF-1
W-MBF-2
W-DJH-1
W-DJH-2
S-KCF-1
S-SFP-1
S-OSS-1
O141S/P142S
LINE 313
NEW ENGLAND POWER CO 59 GRAFTON ST
NEW ENGLAND POWER CO GRAFTON ST
DEETER JOHN E JR 70 GRAFTON ST
TPR HOMES LLC 83 GRAFTON ST

Index Map


- NO WORK AT STRUCTURE
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE (LINE O141/P142
- REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- LINE 313
- O141S/P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

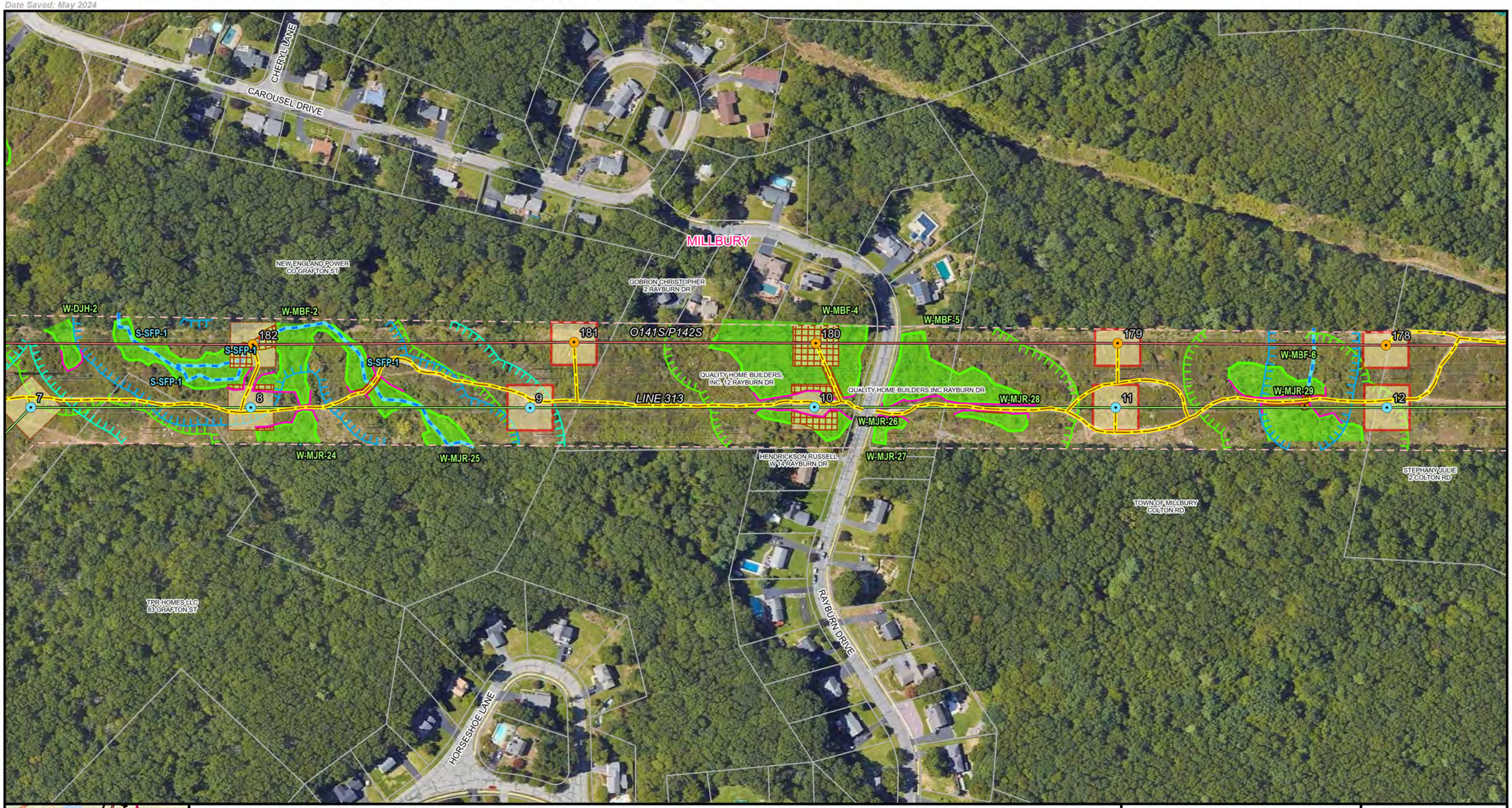
MILLBURY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

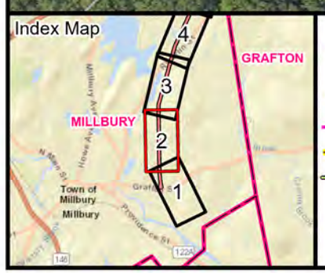
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map



- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- LINE 313
- O141S/P142S
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

MILLBURY, MA

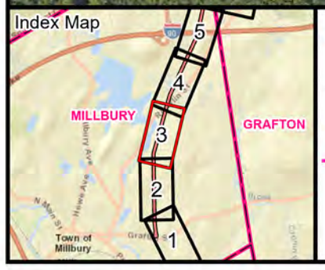
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

RIVERLIN STREET
HAMMERSMITH HOMES LLC RIVERLIN ST
COLTON ROAD
RIVERLIN STREET REALTY LLC 211 RIVERLIN ST
TOWN OF MILLBURY COLTON RD
W-MBF-7
O141S/P142S
LINE 313
W-MJR-30
W-MBF-8
W-MBF-10
W-MBF-9
W-MJR-31
W-MJR-29
MILLBURY
STEPHANY JULIE 2 COLTON RD
MATURI DEBORAH A TRST 3 COLTON RD
GUSTAFSON RAGNAR WILLIAM III +TRST COLTON RD
177
176
175
174
173
172
178
13
14
15
16
17
18
12

Index Map


- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142S
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- TOP OF BANK/OHW LINE
- DELINEATED STREAM CENTERLINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

MILLBURY, MA

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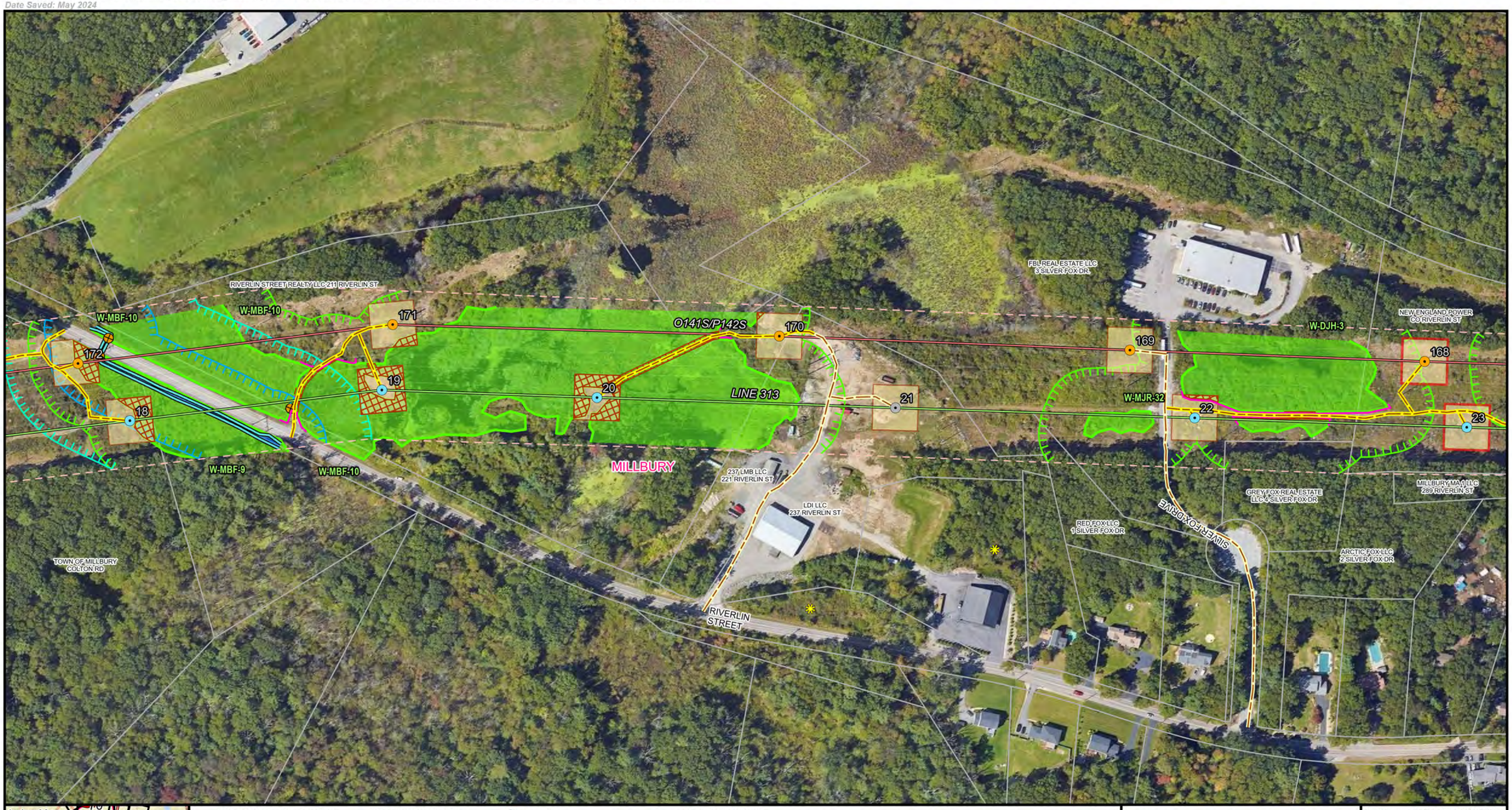
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

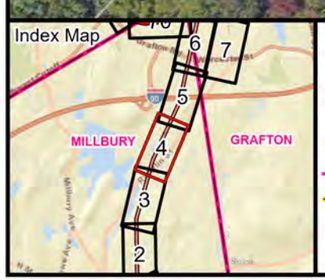
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map



- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142S
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED NON-JD DRAINAGE LINE
- TOP OF BANK/OHW LINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

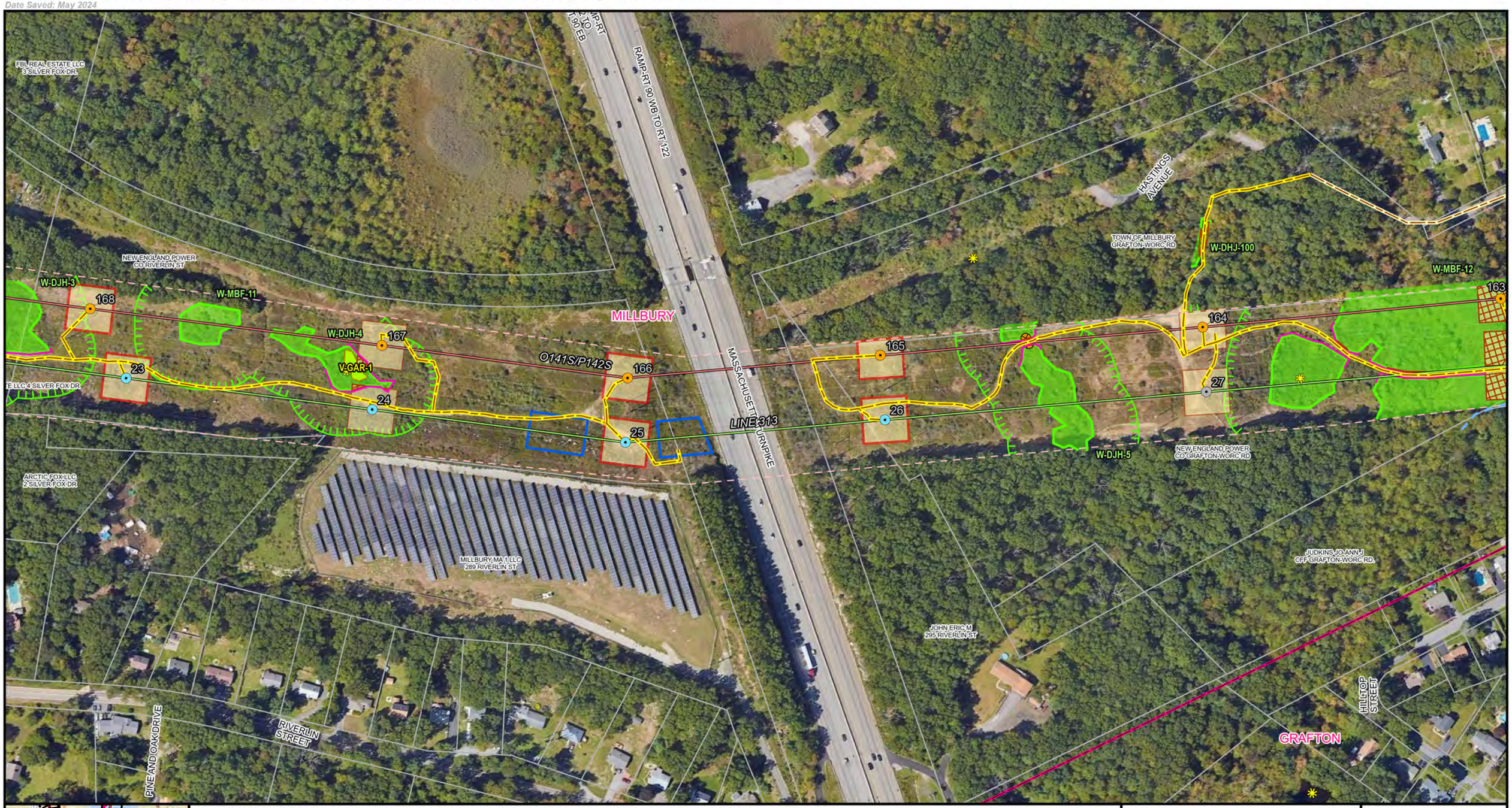
MILLBURY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map

- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- APPROXIMATED PERENNIAL STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

GRAFTON & MILLBURY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

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Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

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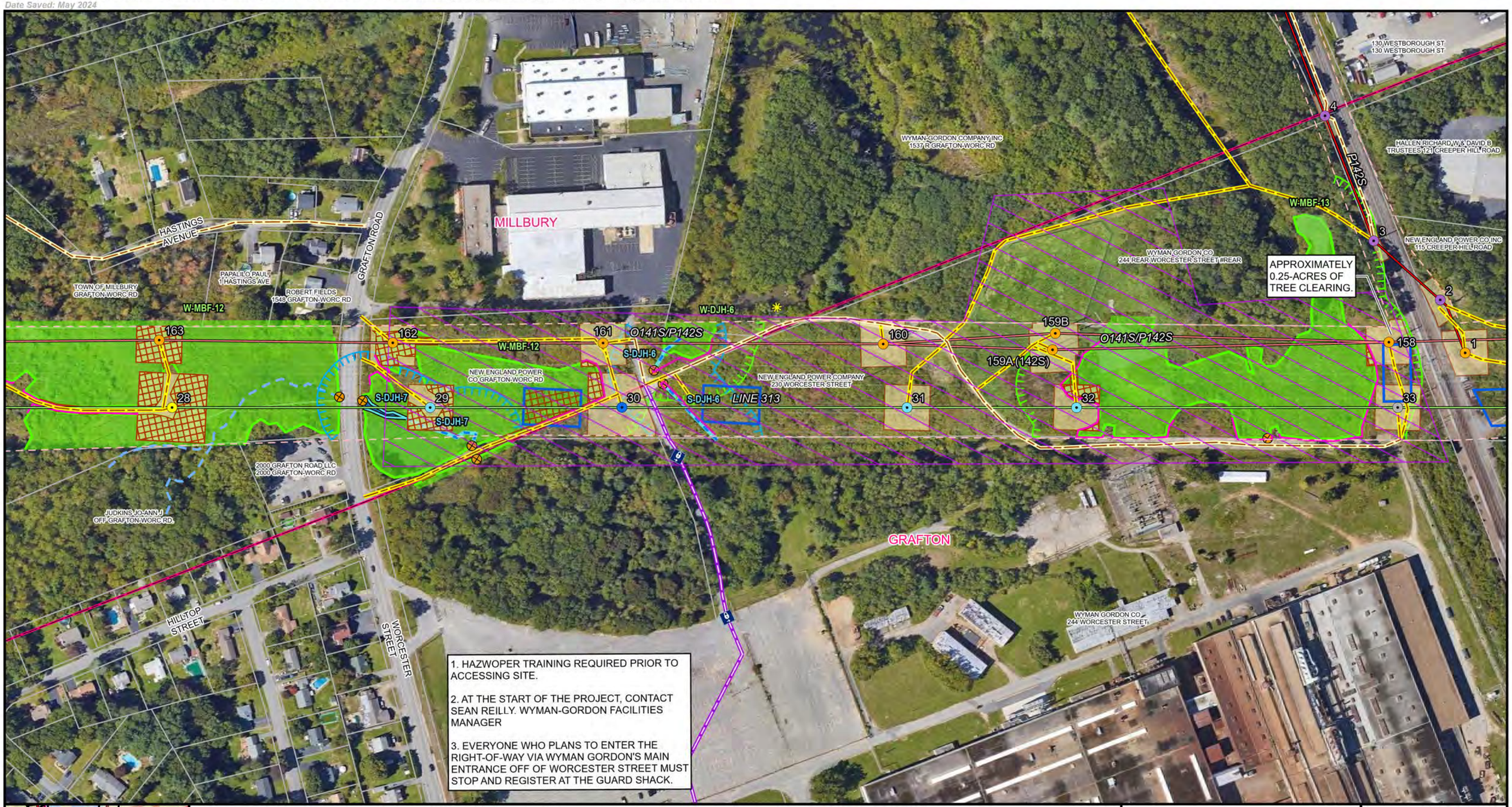
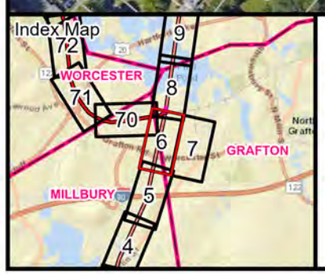


1. HAZWOPER TRAINING REQUIRED PRIOR TO ACCESSING SITE.

2. AT THE START OF THE PROJECT, CONTACT SEAN REILLY. WYMAN-GORDON FACILITIES MANAGER

3. EVERYONE WHO PLANS TO ENTER THE RIGHT-OF-WAY VIA WYMAN GORDON'S MAIN ENTRANCE OFF OF WORCESTER STREET MUST STOP AND REGISTER AT THE GUARD SHACK.



- ACCESS GATE
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- OTHER MAINTENANCE (PHASE 1); REPLACE STRUCTURE, SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- LINE 313
- O141S/P142S
- P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- MADEP WETLAND (2005)*
- APPROXIMATED PERENNIAL STREAM CENTERLINE
- TOP OF BANK/OHW LINE
- DELINEATED STREAM CENTERLINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

GRAFTON & MILLBURY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

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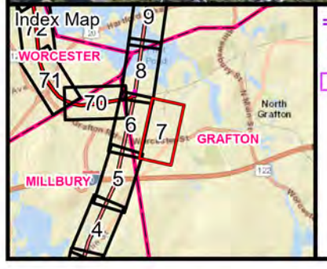
Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



ALTERNATE
MADEP 21E SITE LOCATION
POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
PARCEL BOUNDARY
TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

GRAFTON & MILLBURY, MA

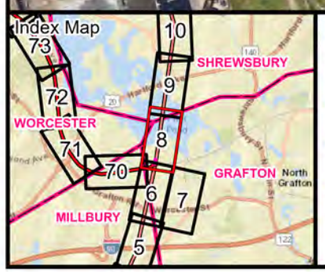
Page 7 of 84

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



- ACCESS GATE
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142S
- P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- TOP OF BANK/OHW LINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

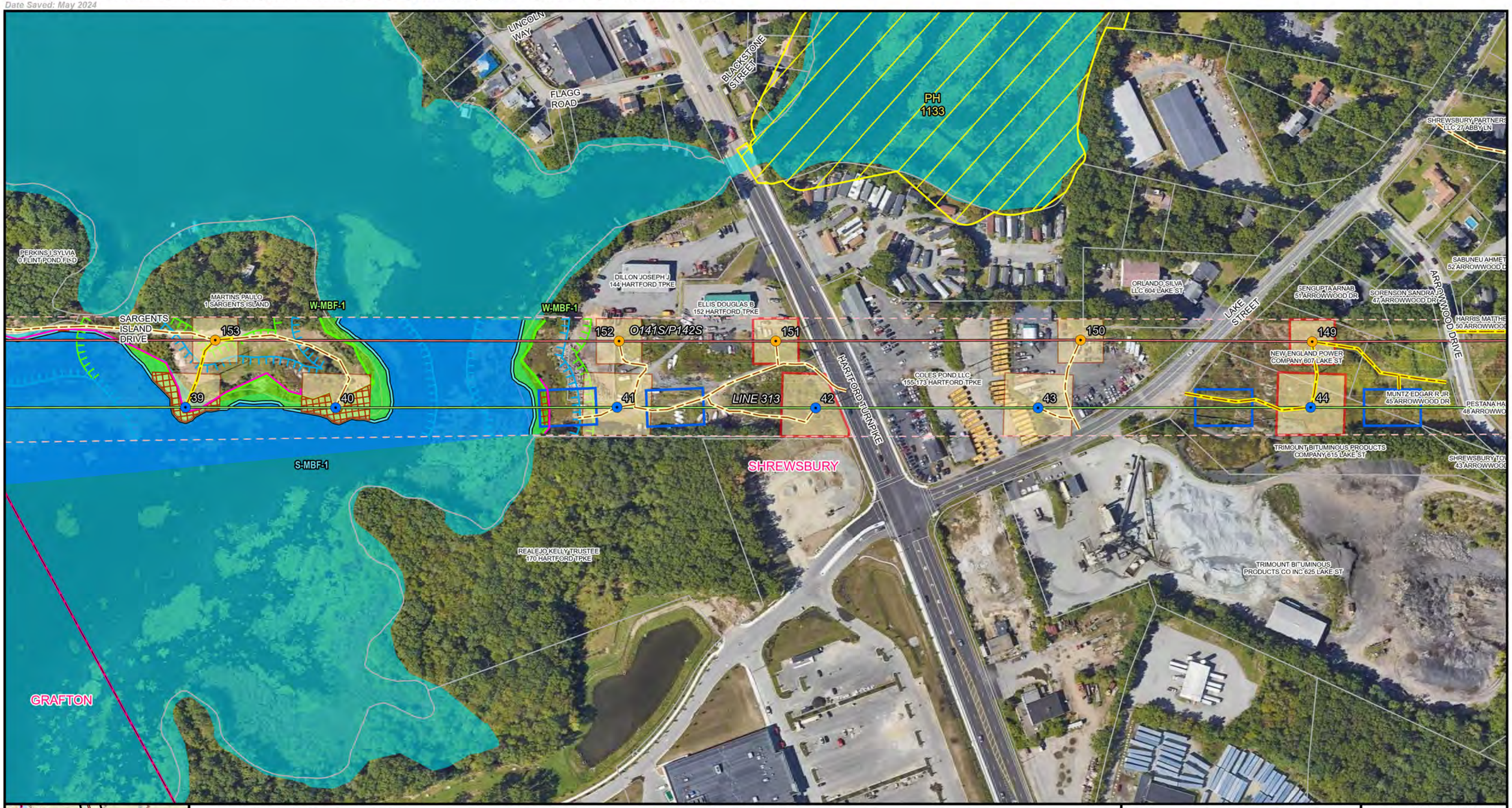
MILLBURY, GRAFTON, WORCESTER, & SHREWSBURY, MA

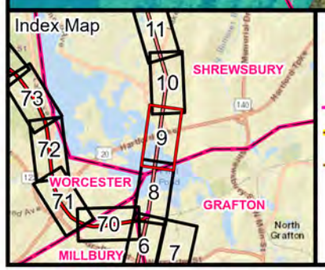
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)





- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- TOP OF BANK/OHW LINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- NHESP PRIORITY HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHREWSBURY, MA

Page 9 of 84

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

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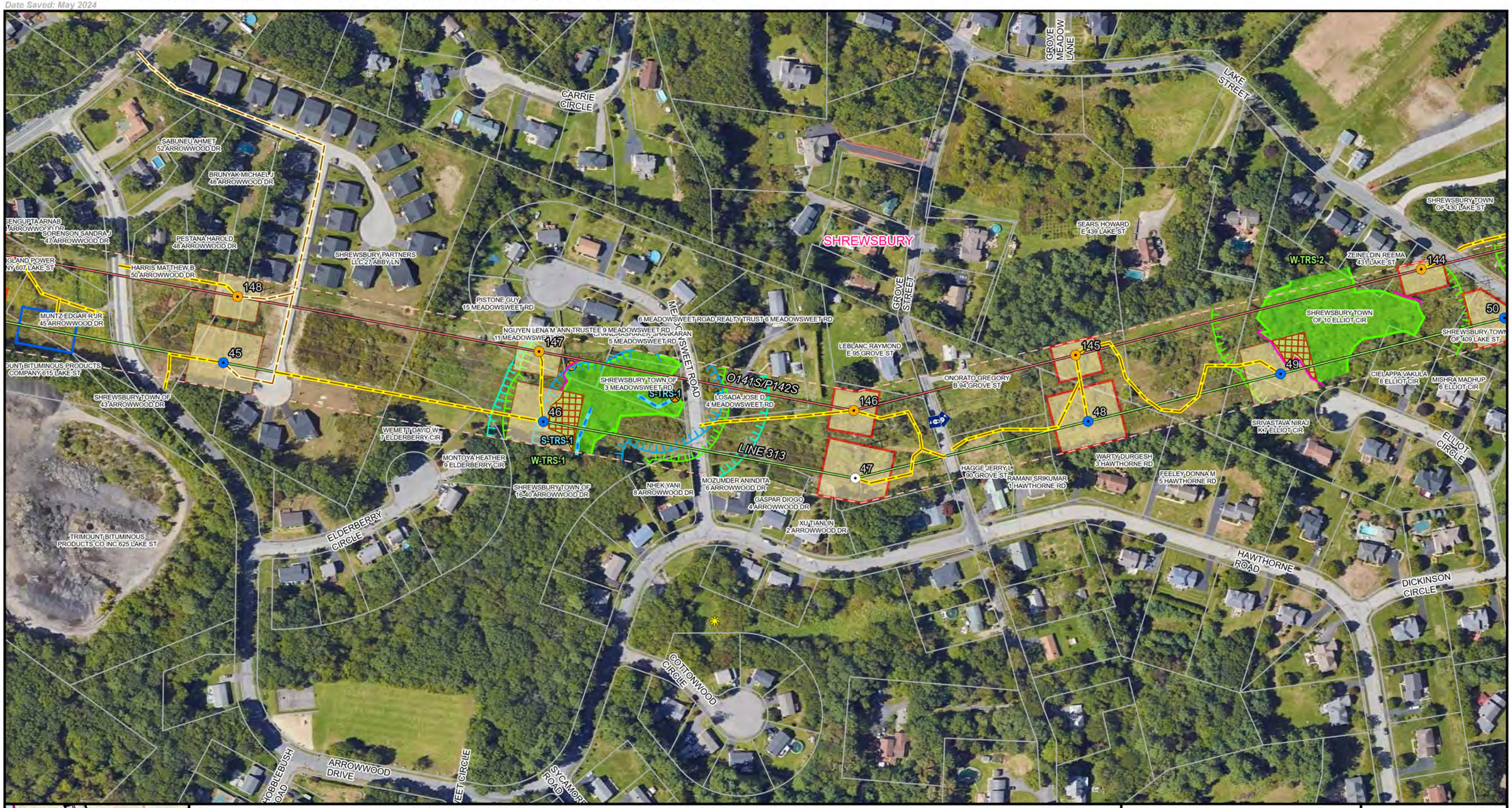
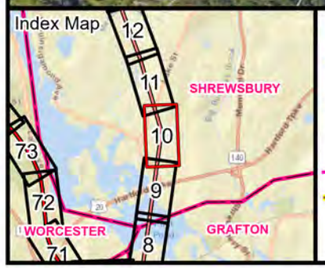
Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map



- ACCESS GATE
- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

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1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHREWSBURY, MA

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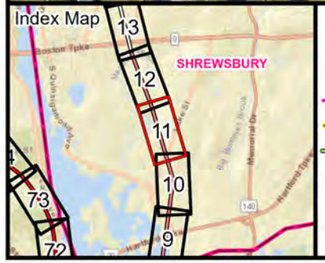
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

Index Map



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- LINE 313
- O141S/P142S
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHREWSBURY, MA

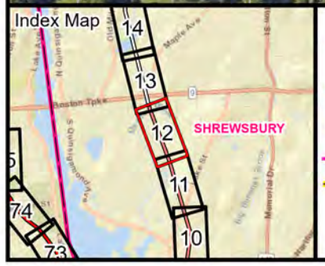
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid

TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
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- TYPE S ROAD
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- O141S/P142
- O141S/P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 200' PERENNIAL RIVERFRONT AREA
- APPROXIMATED PERENNIAL STREAM CENTERLINE
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- DELINEATED STREAM CENTERLINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHREWSBURY, MA

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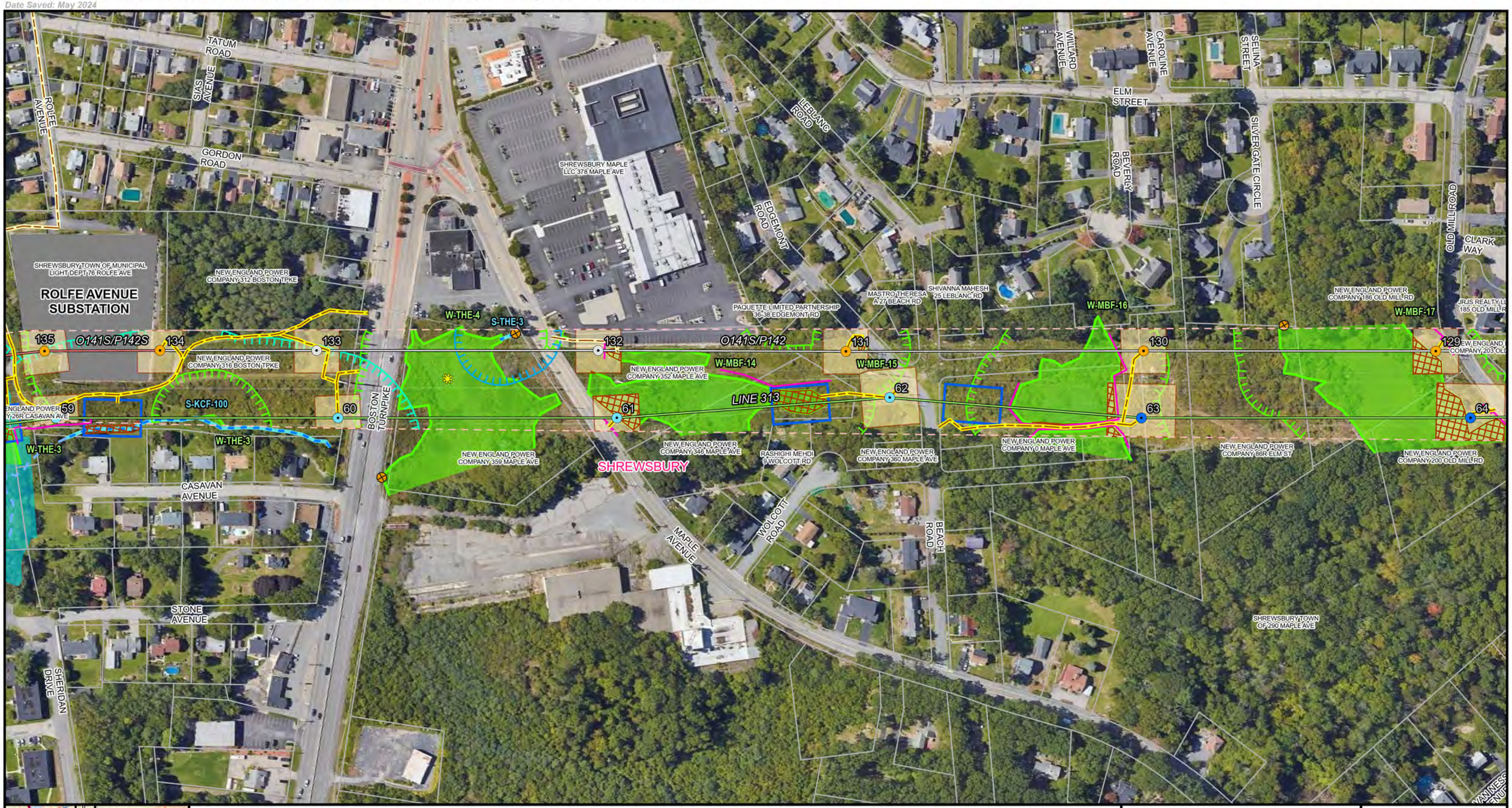
Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142
- O141S/P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- APPROXIMATED PERENNIAL STREAM CENTERLINE
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHREWSBURY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

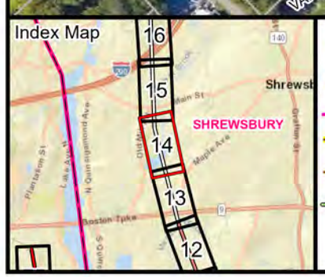
Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

ELM STREET
POND VIEW DRIVE
MILLWOOD DRIVE
MANOR ROAD
CLARK WAY
SHREWSBURY,TOWN OF,0 POND VIEW DR
NEW,ENGLAND,POWER COMPANY,49-81 OLD MILL RD
ELWORTHY,STEPHROY,MICHAEL R P,43 MILLWOOD D,50 MANOR RD
NEW,ENGLAND,POWER COMPANY,256-272 MAIN ST
NEW,ENGLAND,POWER COMPANY,186 OLD MILL RD
JRJS REALTY LLC,185 OLD MILL RD
W-MBF-18
S-MBF-18.1
W-MBF-18
O141S/P142
NEW,ENGLAND,POWER COMPANY,97R OLD MILL RD
125
126
127
128
129
124
NEW,ENGLAND,POWER COMPANY,203 OLD MILL RD
68
67
66
LINE 313
65
64
69
OLD MILL ROAD
W-MBF-18
W-GAR-2
W-GAR-2
W-MBF-17
NEW,ENGLAND,POWER COMPANY,200 OLD MILL RD
O'BRIEN KEVIN,207 OLD MILL RD
SHREWSBURY,TOWN OF,PARKS & RECREATION,7 MINUTEMAN WAY
STRUCTURES 67-69 WILL NEED FILL ADDED
CRIDER CATHLEEN M,219 OLD MILL RD
TOWNER ADAM D,215 OLD MILL RD
MINUTEMAN WAY
SHREWSBURY,TOWN OF,290 MAPLE AVE
SHREWSBURY
BUNKER HILL ROAD
CONCORD ROAD
VANNESS AVENUE

Index Map



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142
- TIMBER MATTING
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- TOP OF BANK/OHW LINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

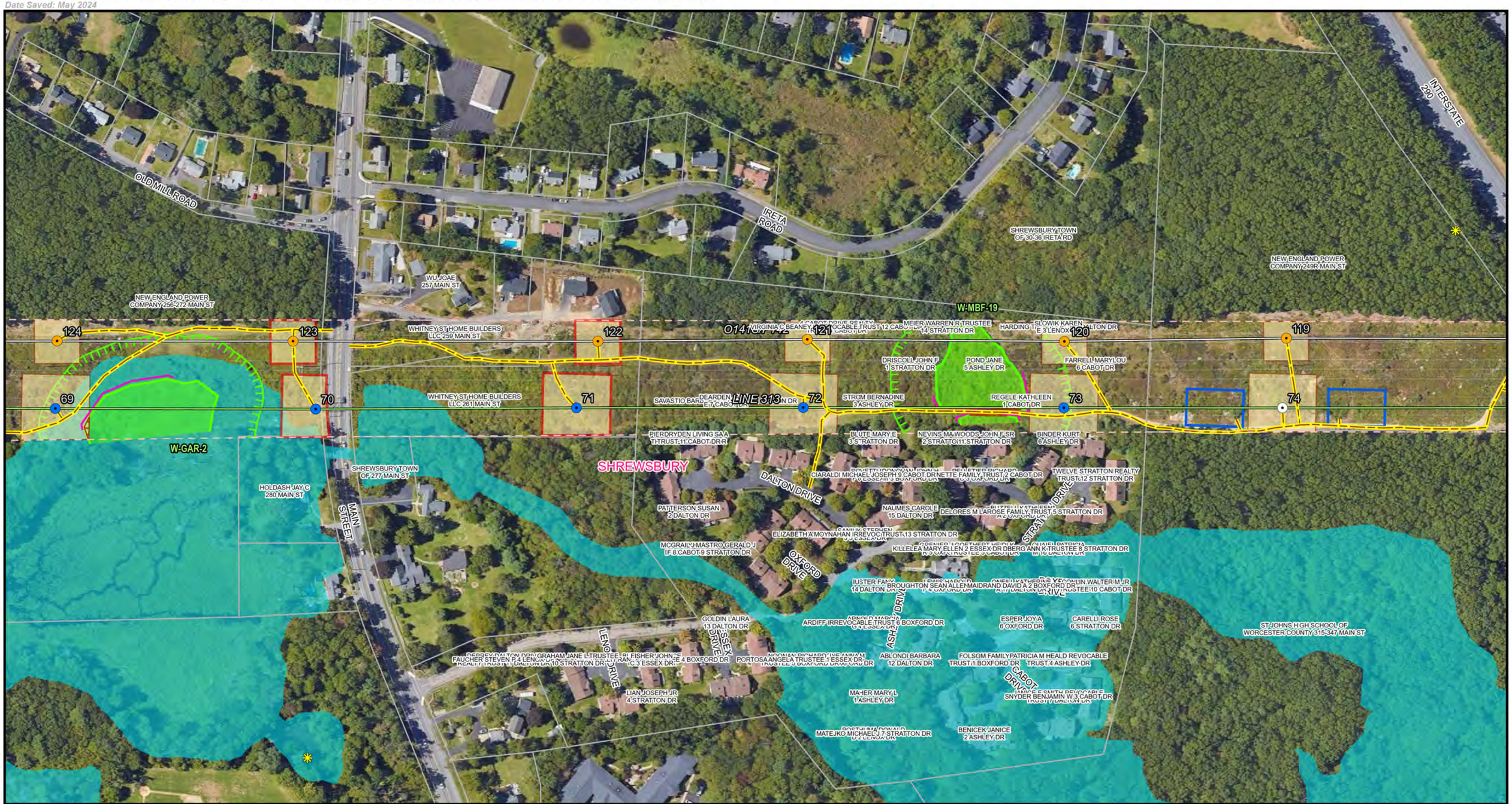
SHREWSBURY, MA

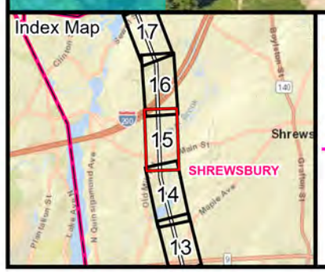
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)





- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- LINE 313
- O141S/P142
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

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1 inch = 200 Feet

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Feet

LINE 313/343 & O141/P142

FIGURE 2
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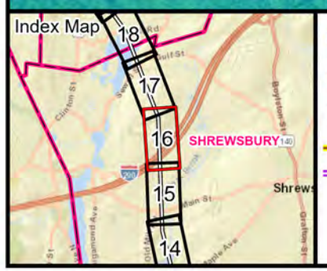
Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

NEW ENGLAND POWER COMPANY 82R HOLDEN ST
SHREWSBURY TOWN OF 64 HOLDEN ST
NEW ENGLAND POWER COMPANY 249R MAIN ST
118
O141S/P142
117
116
115
114
75
76
LINE 313
77
78
79
INTERSTATE 290
NEW ENGLAND POWER COMPANY 98R SEWALL ST
SHREWSBURY
NEW ENGLAND POWER COMPANY 303R MAIN ST
STATELY HO 45 CYPRESS
ST JOHNS HIGH SCHOOL OF WORCESTER COUNTY 315-347 MAIN ST
SHREWSBURY TOWN OF 361R MAIN ST

Index Map



- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- ALTERNATE
- LINE 313
- O141S/P142
- PULL PAD
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

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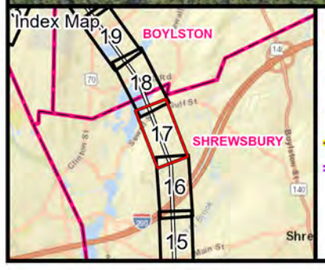

- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- ALTERNATE
- LINE 313
- O141S/P142
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
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- TOWN BOUNDARY

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

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Base Map: Google Imagery

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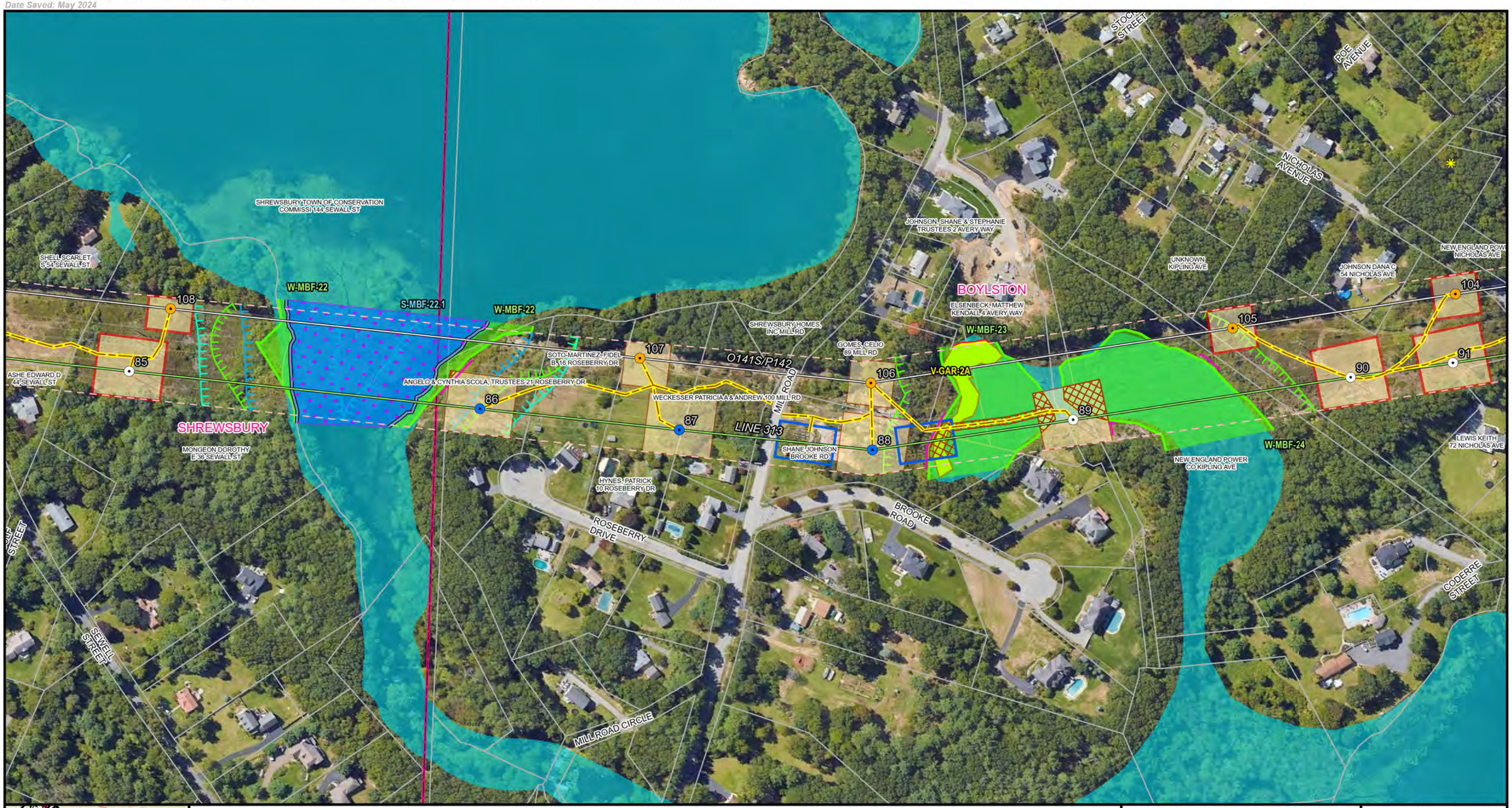
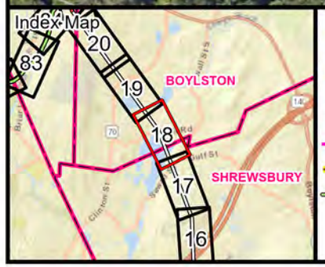
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)





- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- LINE 313
- O141S/P142
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- TOP OF BANK/OHW LINE
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- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
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0 100 200
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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

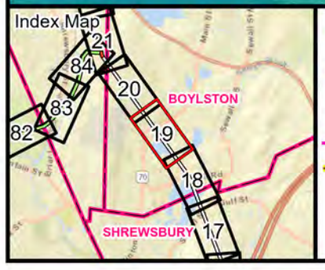
BOYLSTON & SHREWSBURY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- ALTERNATE
- LINE 313
- O141S/P142
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- NHESP CERTIFIED VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- NHESP PRIORITY HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

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0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

BOYLSTON, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

PAUL X TIVNAN DRIVE

WEST BOYLSTON TOWN OF PAUL X TIVNAN DRIVE

WEST BOYLSTON

COMMONWEALTH OF MASSACHUSETTS SHREWSBURY STREET

DEPARTMENT OF CONSERVATION & RECREATION HARTWELL STREET REAR

TOWN OF BOYLSTON 1 ELMWOOD PL

PH 1245

99 98 97 O141S/P142 96 95

NEW ENGLAND POWER CO MAIN ST

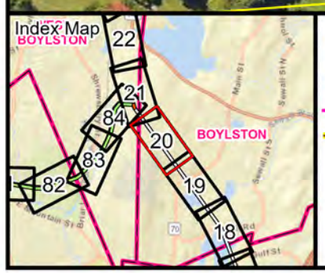
96 97 98 LINE 313 99 100

W-GAR-1

BOYLSTON

TOWN OF BOYLSTON 215-221 MAIN ST

Index Map



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142
- TIMBER MATTING
- WORKPAD (NO GRADING REQUIRED)
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- OUTSTANDING RESOURCE WATERS*
- NHESP PRIORITY HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

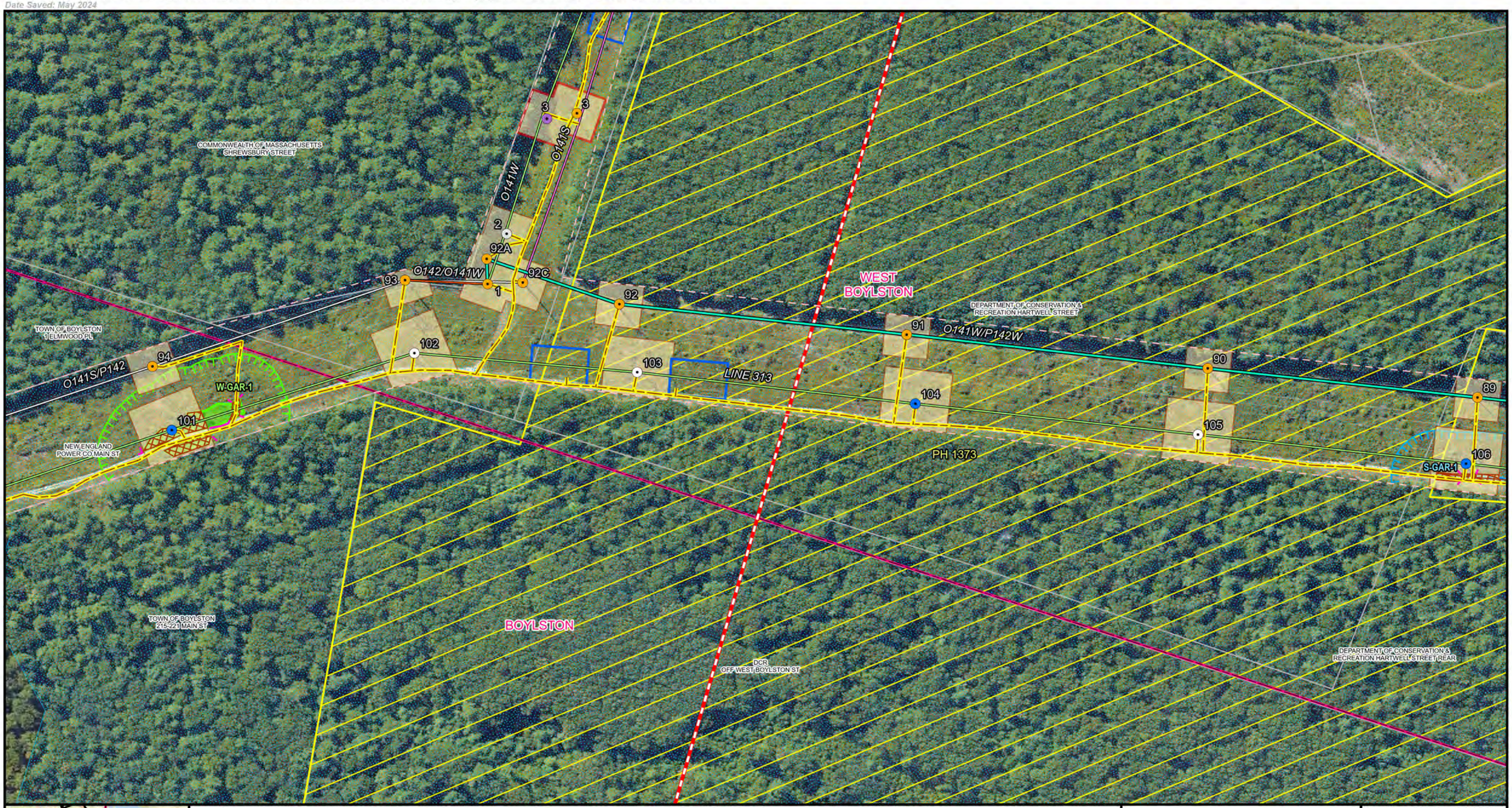
BOYLSTON & WEST BOYLSTON, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

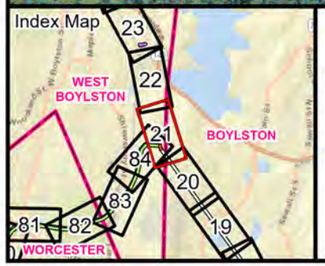
Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE STRUCTURE (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- NATURAL GAS PIPELINE
- TYPE S ROAD
- LINE 313
- O141S
- O141S/P142
- O141W
- O142/O141W
- O141W/P142W
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- OUTSTANDING RESOURCE WATERS*
- NHESP PRIORITY HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

BOYLSTON & WEST BOYLSTON, MA

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Base Map: Google Imagery

nationalgrid
TRC

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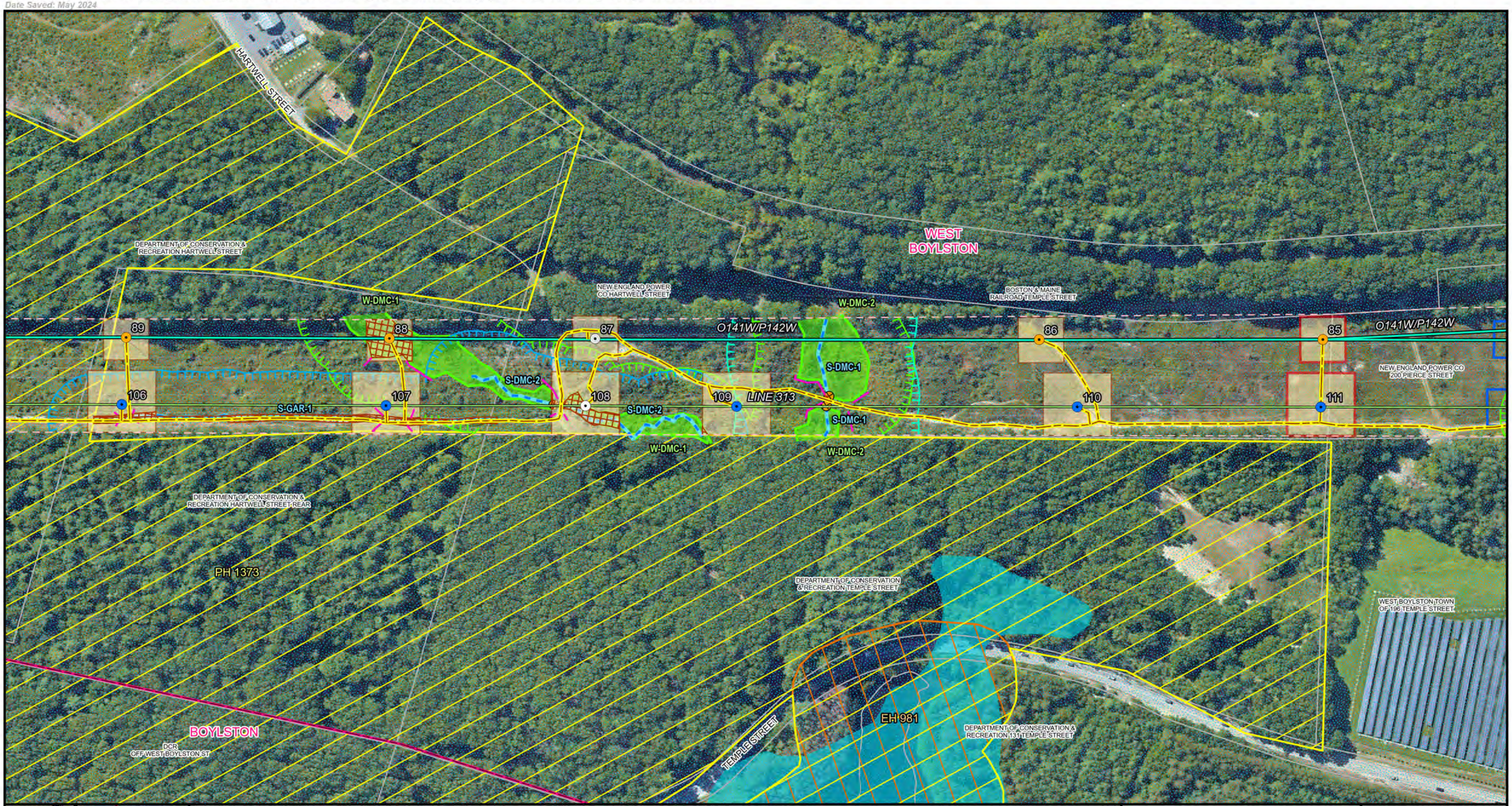

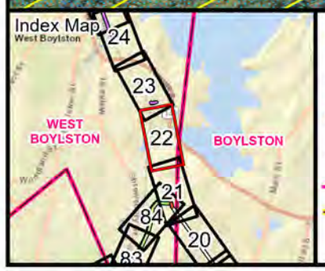

- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE STRUCTURE (LINE O141/ P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- LINE 313
- O141W/P142W
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- OUTSTANDING RESOURCE WATERS*
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WEST BOYLSTON, MA

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Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

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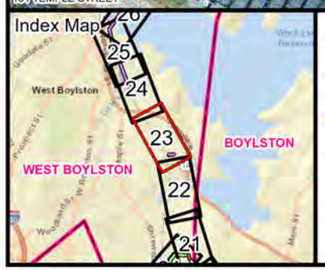

- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- P142N/O141N
- O141W/P142W
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 200' PERENNIAL RIVERFRONT AREA
- APPROXIMATED PERENNIAL STREAM CENTERLINE
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- OUTSTANDING RESOURCE WATERS*
- NHESP PRIORITY HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

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Base Map: Google Imagery

nationalgrid
TRC

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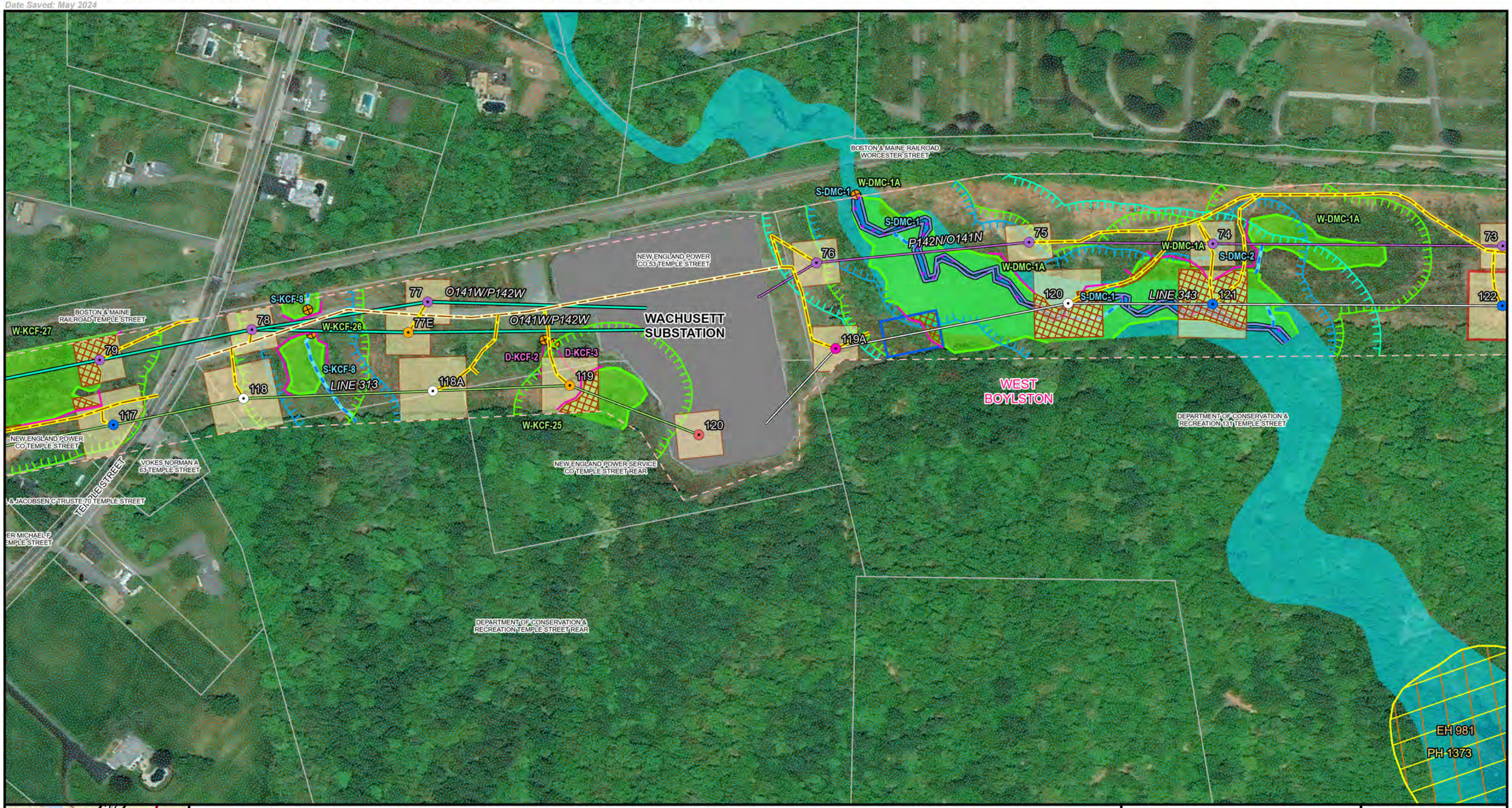
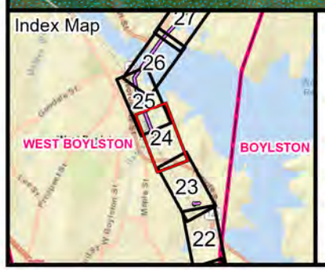


Index Map



- NO WORK AT STRUCTURE
- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- REPLACE SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- LINE 343
- P142N/O141N
- O141W/P142W
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED NON-JD DRAINAGE LINE
- TOP OF BANK/OHW LINE
- DELINEATED STREAM CENTERLINE
- COLDWATER FISHERY
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- OUTSTANDING RESOURCE WATERS*
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WEST BOYLSTON, MA

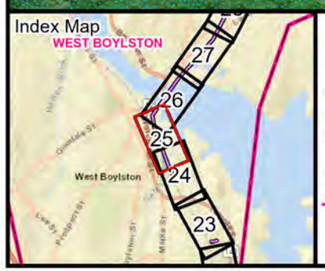
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

Index Map



- OTHER MAINTENANCE (PHASE 1); REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED NON-JD DRAINAGE LINE
- TOP OF BANK/OHW LINE
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1 inch = 200 Feet

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WEST BOYLSTON, MA

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Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

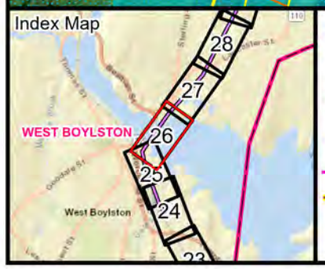
nationalgrid

TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

GOODALE STREET
WORCESTER STREET
BEAMAN STREET
HOLT STREET
LASTERLING STREET
LANCASTER STREET
TON & MAINE RAILROAD
ORCESTER STREET
DEPARTMENT OF CONSERVATION & RECREATION 131 TEMPLE STREET
WB-GAR-1
70
P142N/O141N
69
68
67
W-DMC-2A
D-DMC-1
125
S-DMC-3
S-DMC-3
LINE 343
126
W-JDB-1
WEST BOYLSTON
EH 981
PH 1373

Index Map



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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

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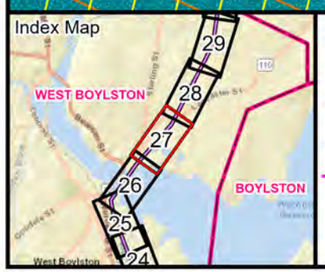

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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WEST BOYLSTON, MA

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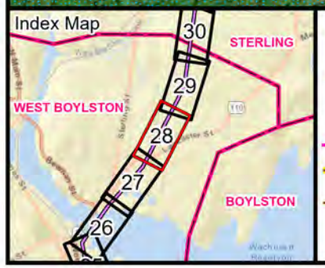
Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

DEPARTMENT OF CONSERVATION & RECREATION LANCASTER COMMONS
DEPARTMENT OF CONSERVATION & RECREATION FAIRBANKS STREET
HERITAGE LANE
FALLAVOLLITA GUY 147 LANCASTER STREET
ERT J JR & CASTER STREET
CHRISTOPHER R. LANCASTER STREET
62
61
P142N/O141N
60
59
W-GAR-2A
ITALIANO WILLIAM S JR FAIRBANKS STREET
S-GAR-1
V-GAR-3
58
57
131
DEPARTMENT OF CONSERVATION & RECREATION LANCASTER STREET
132
133
LINE 343
134
135
136
S-GAR-1
S-GAR-1
FALLAVOLLITA ALEXANDER JR & GUY LANCASTER STREET
WEST BOYLSTON
ROTTI ALBERT J JR WALTER R & PAUL M 94 LANCASTER STREET
FALLAVOLLITA ALEXANDER JR 155 LANCASTER STREET
FALLAVOLLITA ALEXANDER 159 LANCASTER STREET
PUSATERI MARK S 199 LANCASTER STREET
W-DMC-5
FALLAVOLLITA LANCASTER ST REAL 165 LANCASTER STREET
LEKSTROM CHERYL A 33 FAIRBANKS STREET
LAMBERT MARK J 25 FAIRBANKS STREET
LANCASTER STREET
W-DMC-6
FAIRBANKS STREET

Index Map



- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
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- TOP OF BANK/OHW LINE
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- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- MADEP WETLAND (2005)*
- OUTSTANDING RESOURCE WATERS*
- APPROXIMATE EDGE OF ROW
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- TOWN BOUNDARY

N

1 inch = 200 Feet
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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

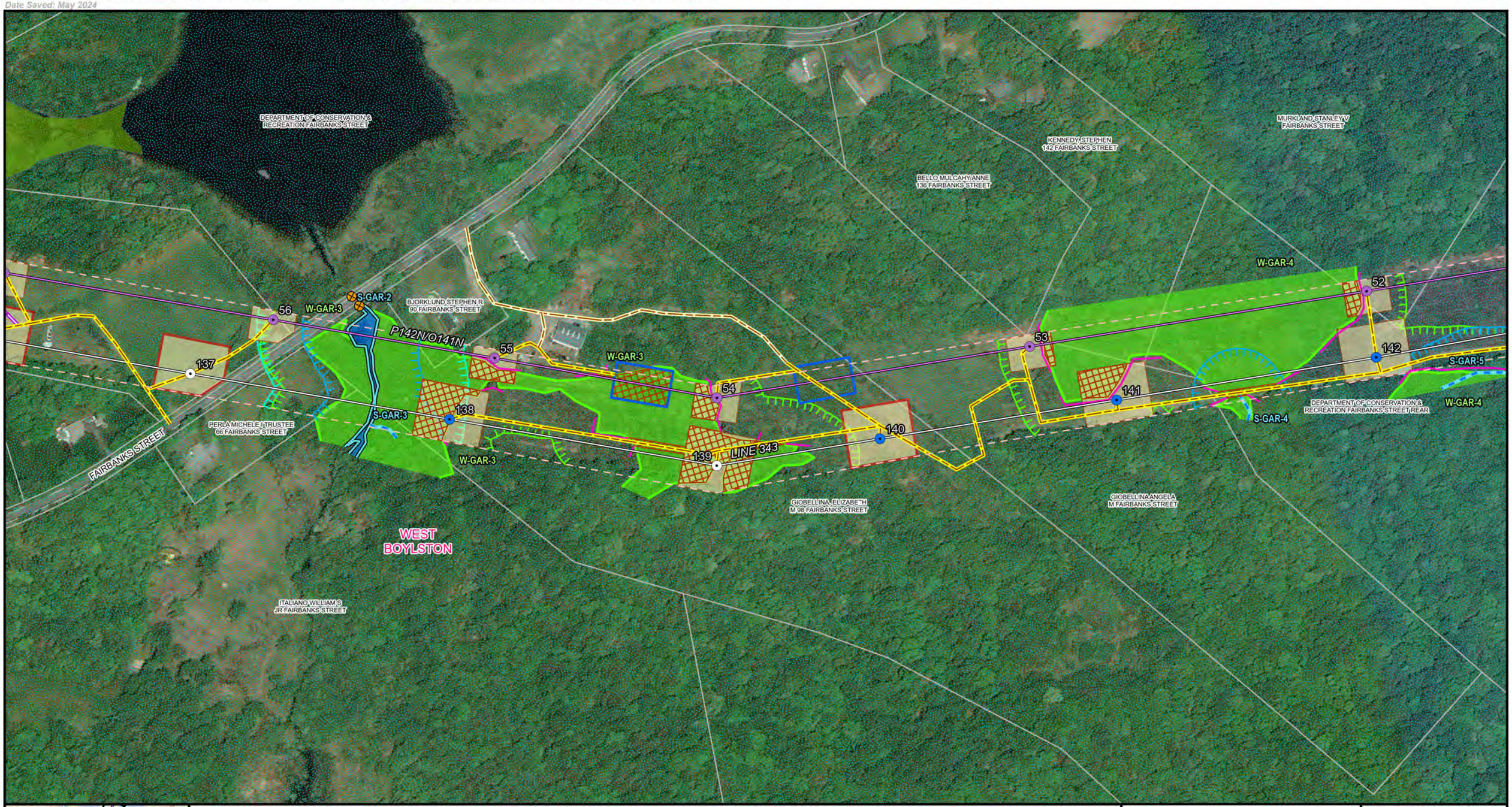
WEST BOYLSTON, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



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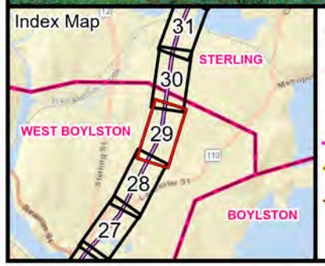

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WEST BOYLSTON, MA

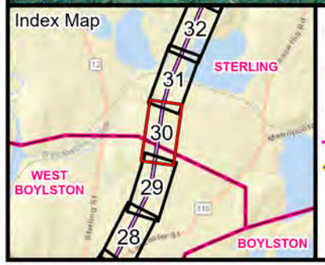
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

Index Map



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1 inch = 200 Feet

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

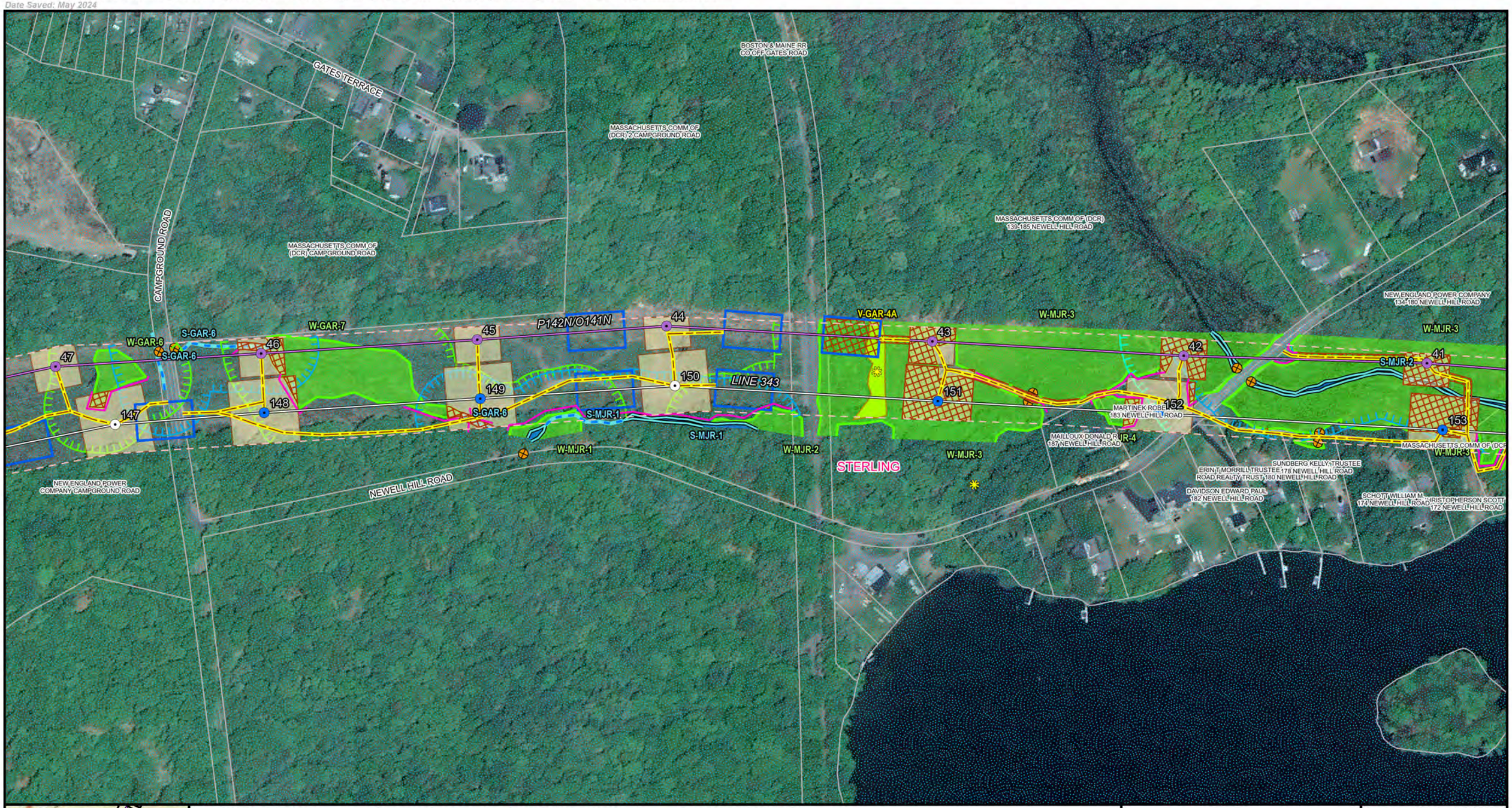
STERLING & WEST BOYLSTON, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



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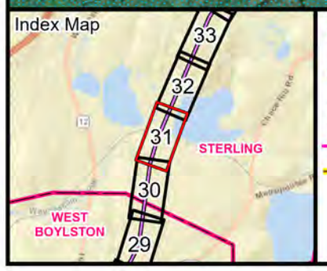

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LINE 313/343 & O141/P142

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ACCESS PLANS

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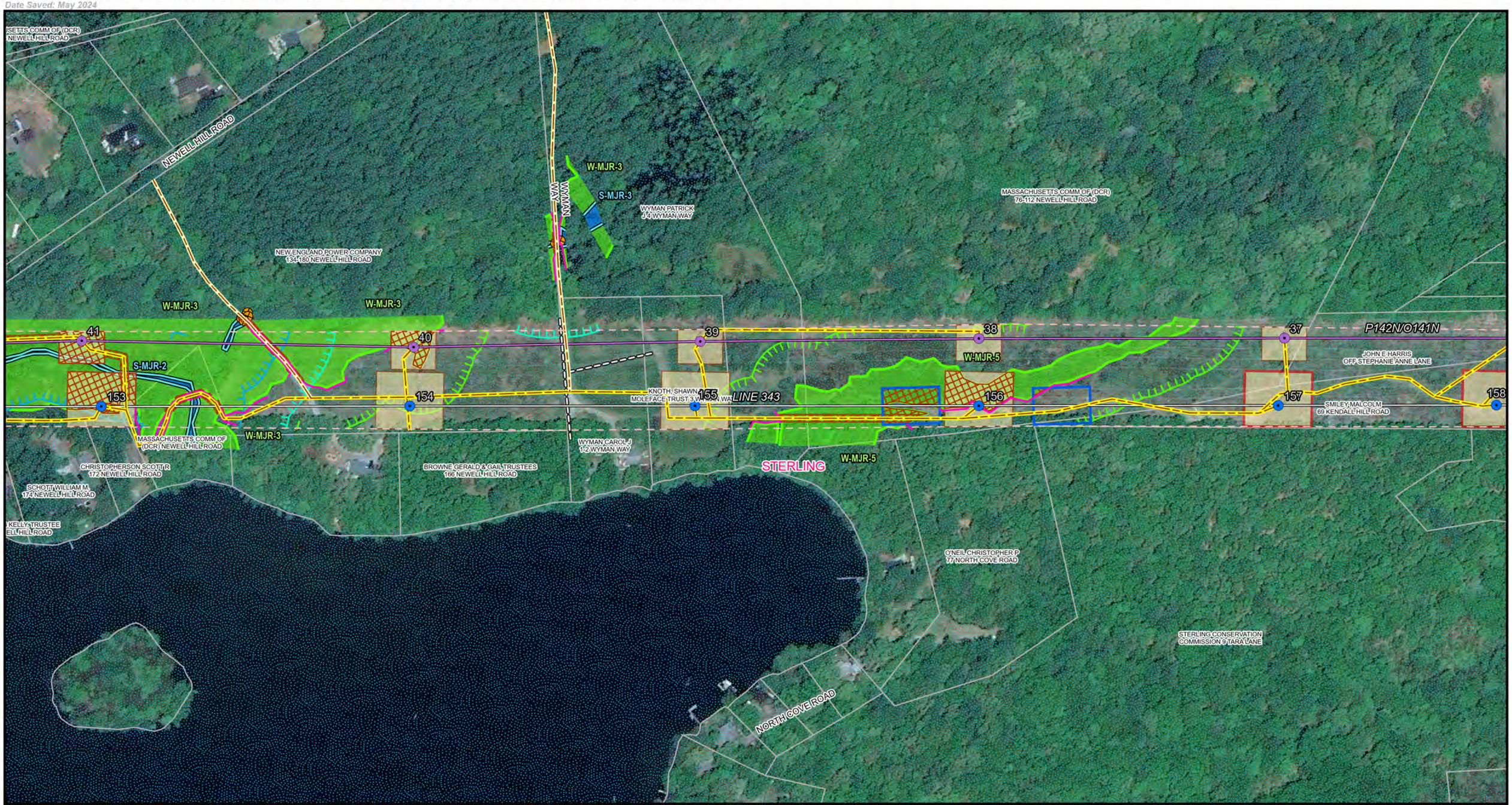

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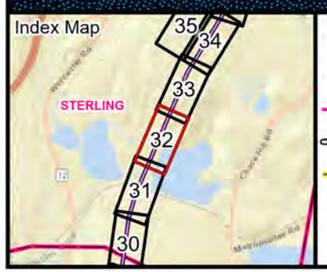

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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

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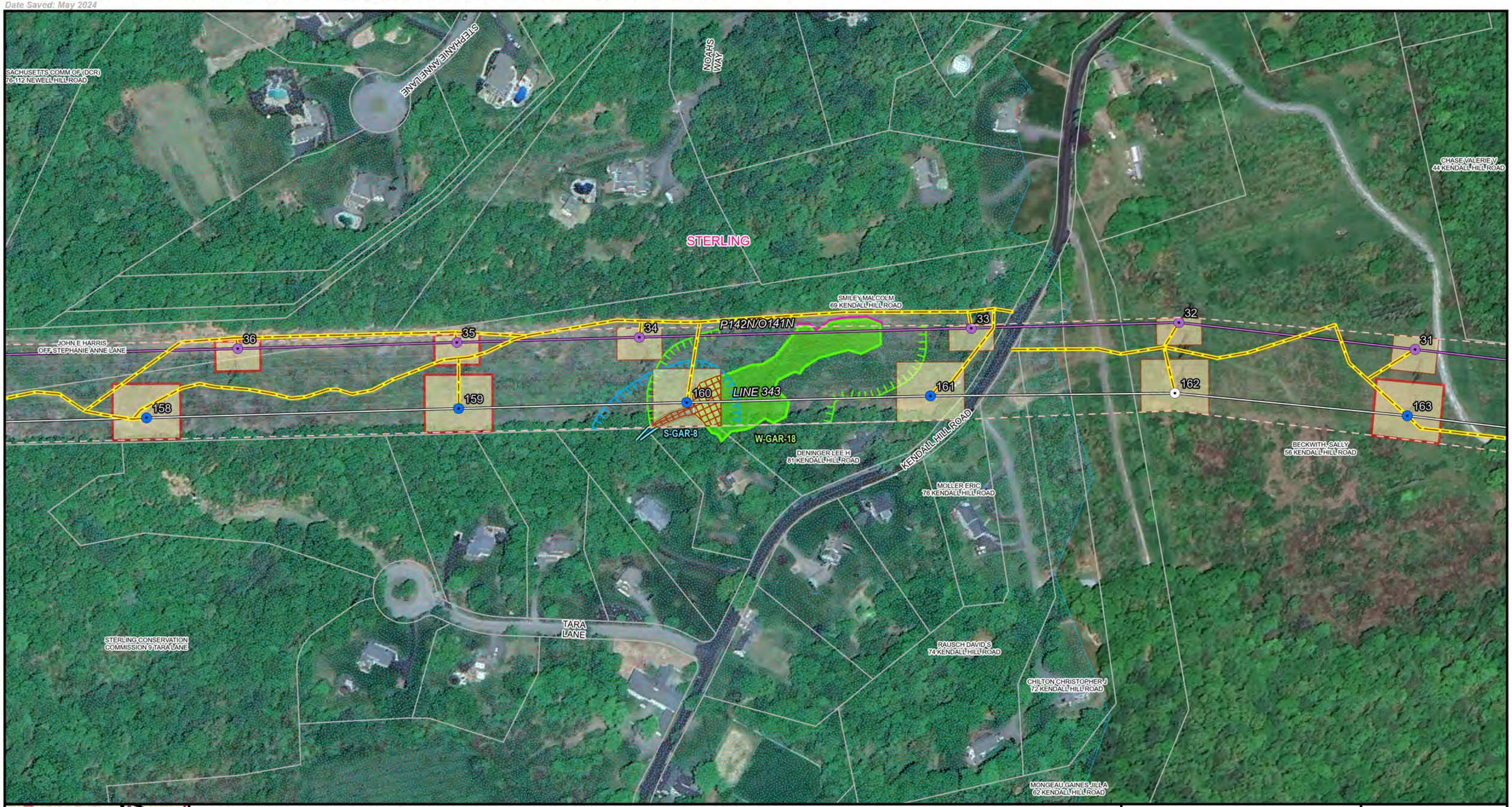

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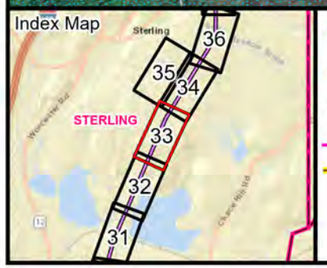

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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

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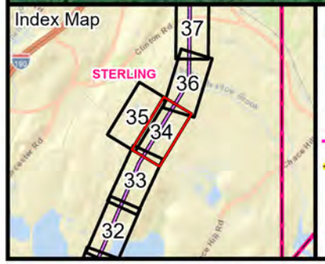

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- DELINEATED VERNAL POOL AREA
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- APPROXIMATE EDGE OF ROW
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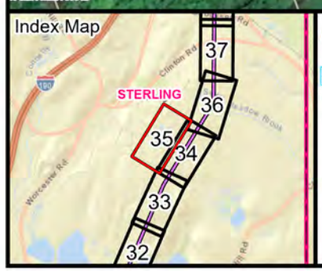

PREFERRED ACCESS-NO IMPROVEMENTS
OUTSTANDING RESOURCE WATERS*
POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
PARCEL BOUNDARY
TOWN BOUNDARY

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

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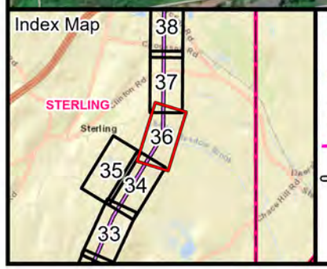

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N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

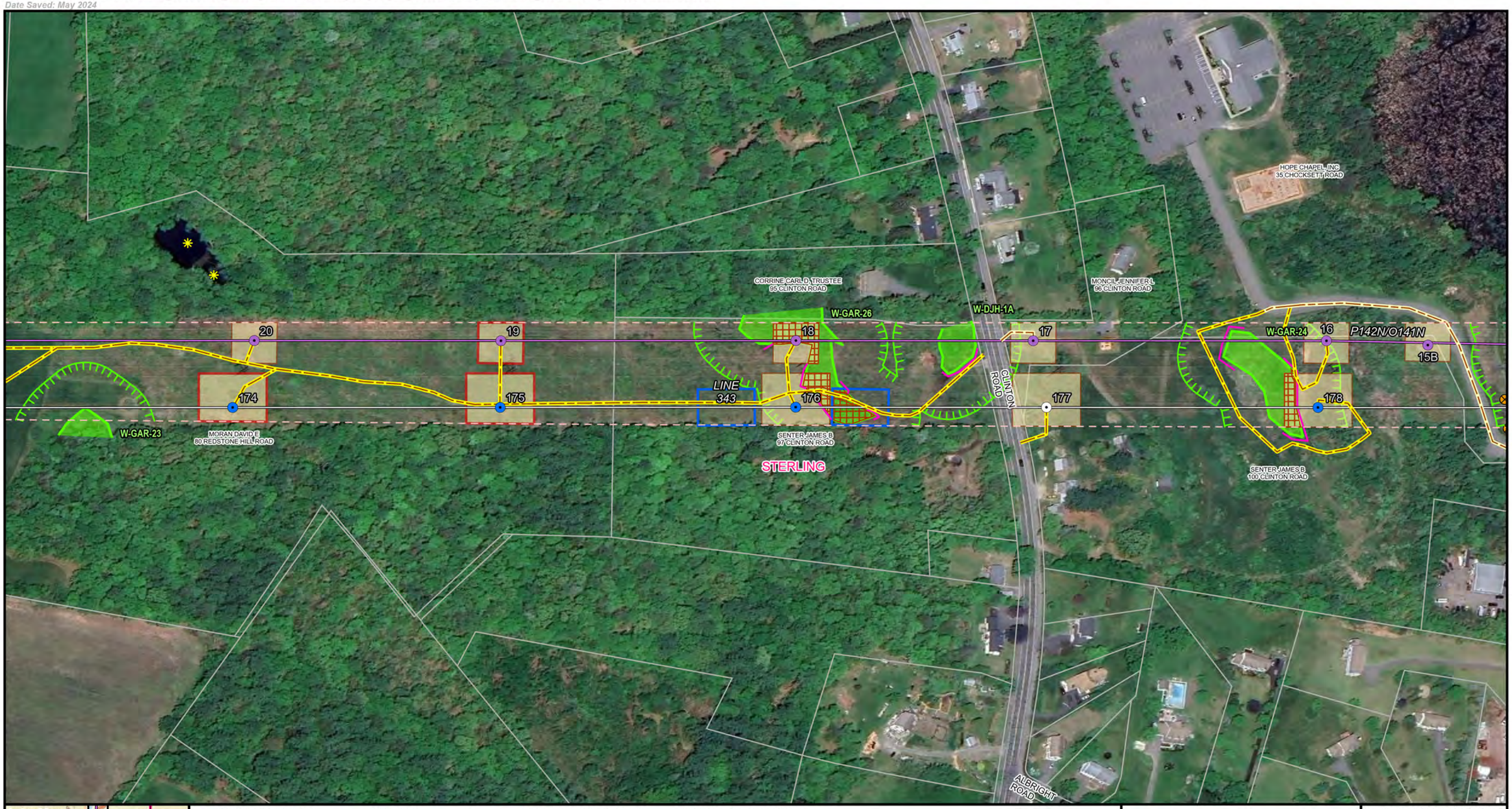
STERLING, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

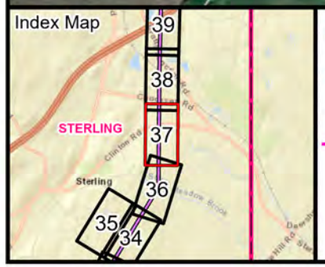
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map



- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

STERLING, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

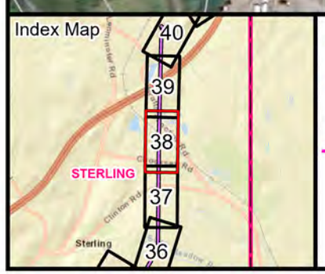
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

NORTHEAST BOULEVARD
HOPE CHAPEL, INC 35 CHOCKSETT ROAD
STERLING TOWN OF 36 CHOCKSETT ROAD
SIMPSON JAMES E 30 CHOCKSETT ROAD
PENN CENTRAL RR OFF PRATTS JUNCTION ROAD
JJCEV REALTY TRUST 140 PRATTS JUNCTION ROAD
W-GAR-25
W-GAR-27
W-GAR-28
P142N/O141N
LINE 343
15B
15
14
13
12
179
180
181
182
183
CHOCKSETT ROAD
SENTER JAMES B 100 CLINTON ROAD
CHOCKSETT PROPERTY OWNER, LLC 44 CHOCKSETT ROAD
CHOCKSETT PROPERTY OWNER, LLC OFF CLINTON ROAD
STERLING
PRATTS JUNCTION ROAD
LINDYS WAY
TOWN OF STERLING 111-129 PRATTS JUNCTION ROAD
NEW ENGLAND POWER CO 97-109 PRATTS JUNCTION

Index Map



- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

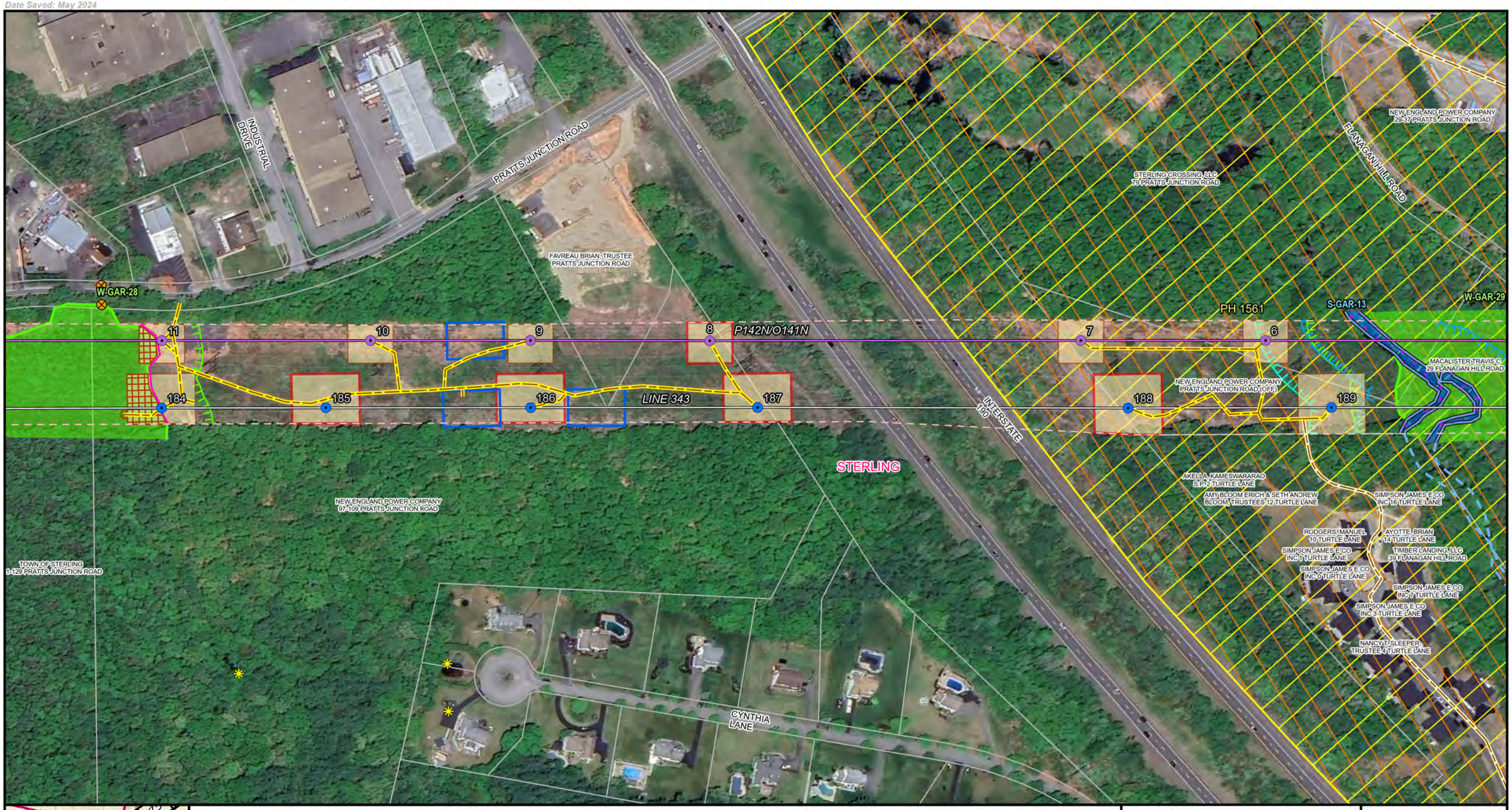
STERLING, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

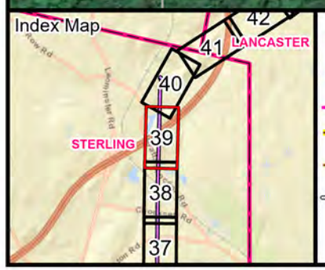
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map



- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- APPROXIMATED PERENNIAL STREAM CENTERLINE
- TOP OF BANK/OHW LINE
- COLDWATER FISHERY
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

STERLING, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

ACCESS LEADS TO PRATT'S JUNCTION RD.

PRATT'S JUNCTION SUBSTATION

15 14A/14B/14C
1 (O141N) 1 (P142N)
2 (O141N) 2 (P142N)
P142N/O141N
4 3
192 LINE 343 193
191 194
5
W-GAR-30
P142N/O141N
W-GAR-29
190
W-GAR-31
195
S-GAR-13
W-GAR-29

NEW ENGLAND POWER COMPANY
29-37 PRATTS JUNCTION ROAD

STERLING

DONALDSON JAMES H.
30 FLANAGAN HILL ROAD

LAWSON LYNNE A
22 FLANAGAN HILL ROAD

FLANAGAN HILL ROAD

MACALISTER TRAVIS C
29 FLANAGAN HILL ROAD

PH 1561

EH 1072

MAUREEN E FORD, LINDA STEVENS, CHERYL FORD, KAREN FORD 32-50 FLANAGAN HILL ROAD

BELAIR ANN MARIE, TRUSTEE
OFF FLANAGAN HILL ROAD

D&R FARMS INC
OFF FLANAGAN HILL ROAD

SIMPSON JAMES E CO
INC 3 TURTLE LANE

SIMPSON JAMES E CO
INC 0 TURTLE LANE

AKELLA, KAMESWARARAO
S P 2 TURTLE LANE

NANCY T. SLEEPER
TRUSTEE 4 TURTLE LANE

SIMPSON JAMES E CO
INC 7 TURTLE LANE

TIMBER LANDING, LLC
39 FLANAGAN HILL ROAD

RODGERS, MANUEL
10 TURTLE LANE

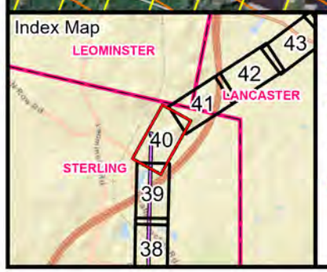
AYOTTE, BRIAN
14 TURTLE LANE

SIMPSON JAMES E CO
INC 16 TURTLE LANE

SIMPSON JAMES E CO
INC 1 TURTLE LANE

AMY BLOOM ERICH & SETH ANDREW BLOOM, TRUSTEES 12 TURTLE LANE

Index Map



- ACCESS GATE
- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP CERTIFIED VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- APPROXIMATED PERENNIAL STREAM CENTERLINE
- TOP OF BANK/OHW LINE
- COLDWATER FISHERY
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

STERLING, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

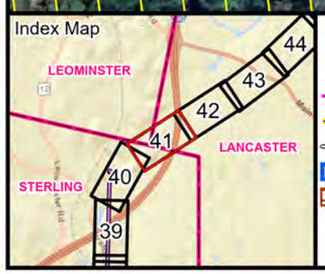
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

LEOMINSTER
CITY OF LEOMINSTER
1000 JUNGLE RD
BELAIR ANN MARIE, TRUSTEE
OFF FLANAGAN HILL ROAD
D & R FARMS INC
0 BROCKELMAN RD
GOODALE, WILFRED, EST
0 BROCKELMAN RD REAR
LANCASTER
D & R FARMS INC
0 BROCKELMAN RD REAR
LANCASTER, TOWN OF
0 BROCKELMAN RD
W-GAR-31
W-GAR-32
W-GAR-33
W-GAR-34
W-GAR-34
S-GAR-14
196
197
198
LINE 343
199
199A
200
PH
1561
STERLING
INTERSTATE
190
D&R FARMS INC
OFF FLANAGAN HILL ROAD
LANCASTER, TOWN OF
0 BROCKELMAN RD REAR
MASSACHUSETTS COMMONWEALTH
OF 0 BROCKELMAN RD REAR
OWNER UNKNOWN
0 BROCKELMAN RD REAR
SCHUMACHER HERMAN, EST
0 BROCKELMAN RD REAR

Index Map



- REPLACE SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- TOP OF BANK/OHW LINE
- COLDWATER FISHERY
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

LANCASTER & STERLING, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

INTERSTATE 190

PH 1561

NASHAWAY FARMS LLC 267 BROCKELMAN RD

LANCASTER TOWN OF 0 BROCKELMAN RD

W-GAR-34

W-GAR-35

200

201

202

LINE 343

203

204

205

206

GAR-34

S-GAR-14

W-GAR-34

W-GAR-36

S-GAR-15

NEW ENGLAND POWER COMP INC 0 BROCKELMAN RD

LANCASTER

MOREIRA MARIA C 237 BROCKELMAN RD

BROCKELMAN ROAD

LANCASTER TOWN OF 0 BROCKELMAN RD REAR

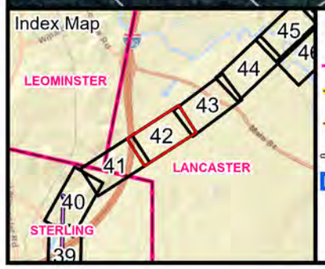
D & R FARMS 0 BROCKELMAN RD

ACCESS LEADS TO BROCKELMAN RD

MASSACHUSETTS COMMONWEALTH OF 0 BROCKELMAN RD REAR

NER UNKNOWN CKELMAN RD REAR

Index Map



- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- TOP OF BANK/OHW LINE
- COLDWATER FISHERY
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

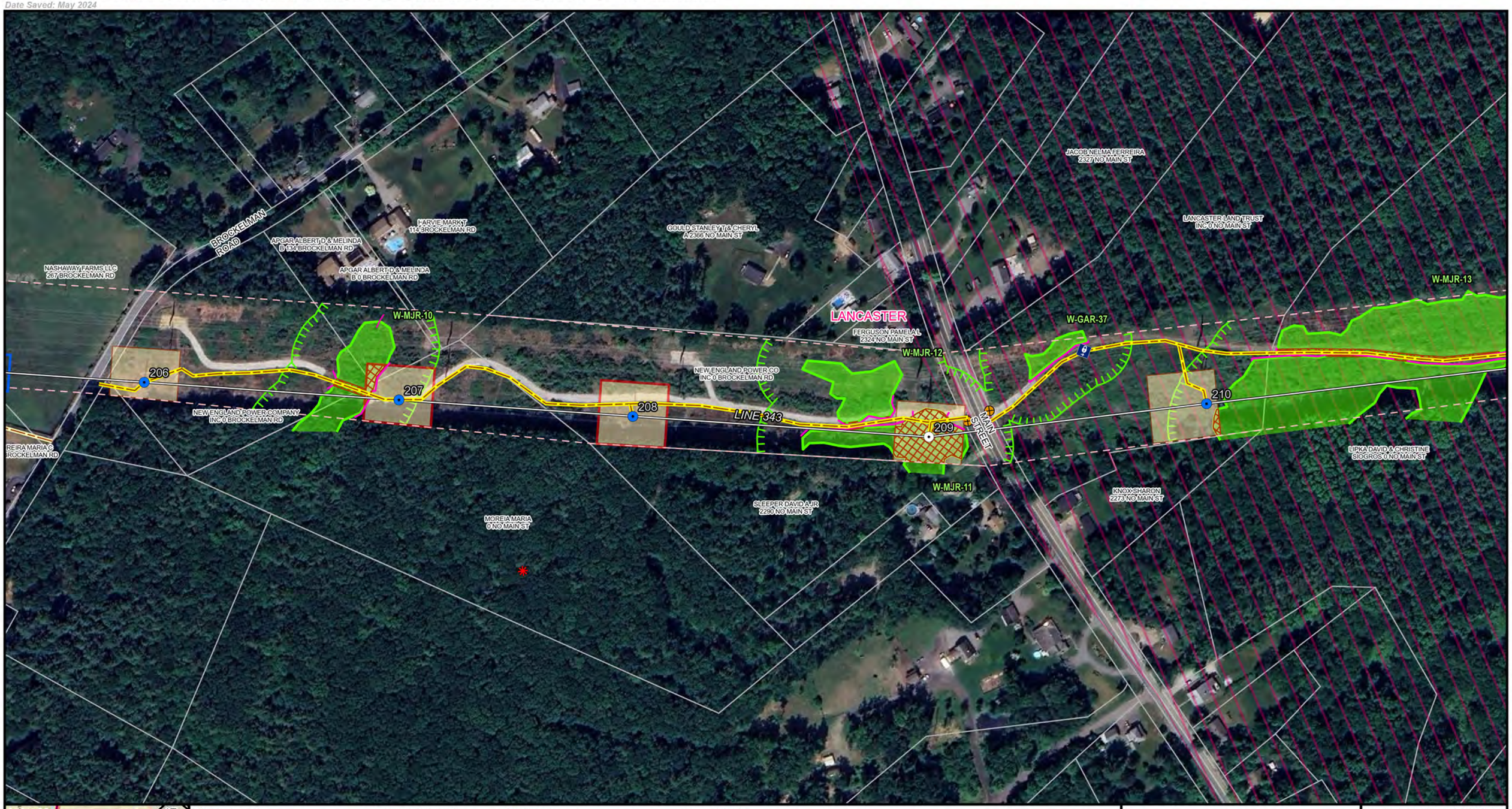
LANCASTER, MA

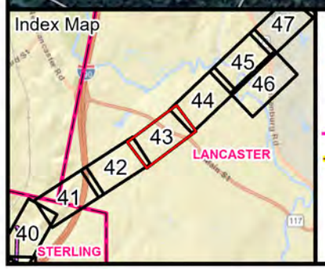
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)





- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP CERTIFIED VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED NON-JD DRAINAGE LINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

LANCASTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid

TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

LANCASTER LAND TRUST INC 0 NO MAIN ST

LANCASTER TOWN OF 0 LUNENBURG RD REAR

W-MJR-13

LIPKA DAVID & CHRISTINE SIOGROS 0 NO MAIN ST

W-GAR-38

W-GAR-39

NORTH LANCASTER LLC 0 NO MAIN ST

S-GAR-16

V-GAR-10

LINE 343

211

212

213

214

215

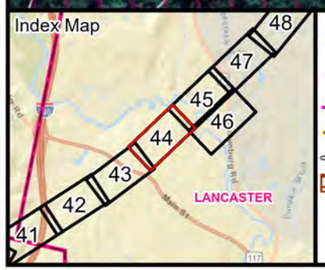
W-GAR-39

LANCASTER

PH 1561

NEW ENGLAND POWER CO INC 0 NO MAIN ST

Index Map



- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- LINE 343
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

LANCASTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

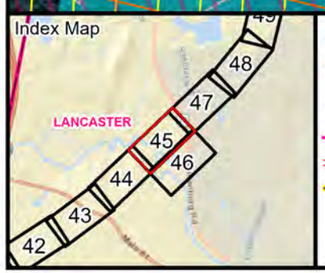
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

NORTH LANCASTER LLC 0 NO MAIN ST
NEW ENGLAND POWER CO INC 0 NO MAIN ST
LANCASTER TOWN OF 1250 LUNENBURG RD
LANCASTER TOWN OF 0 LUNENBURG RD
LANCASTER TOWN OF 0 LUNENBURG RD REAR
W-HSW-3
V-GAR-4
V-HSW-3
V-GAR-8
V-GAR-7
V-GAR-9
S-GR-18
W-HSW-2
W-MJR-19
W-GR-43
W-MJR-18
W-GAR-40
W-GAR-41
W-GR-42
S-GR-19
W-GR-43
W-MJR-17
D-DJH-0
216
217
218
219
220
LINE 343
PH 1561
LANCASTER
COOK POND CONSERVATION AREA (HIKING TRAIL ENTRANCE)
LUNENBURG ROAD

Index Map



- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- NATURAL GAS PIPELINE (QUERIED)
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- NHESP CERTIFIED VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED NON-JD DRAINAGE LINE
- TOP OF BANK/OHW LINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

LANCASTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

W ENGLAND POWER
0 INC 0 NO MAIN ST

COOK POND CONSERVATION AREA (HIKING TRAIL ENTRANCE)

LANCASTER TOWN OF
1250 LUNENBURG RD

LANCASTER TOWN OF
0 LUNENBURG RD

LANCASTER TOWN OF
0 LUNENBURG RD REAR

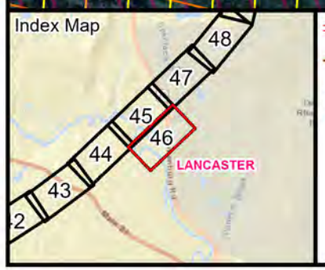
PH
1561

LANCASTER

LUNENBURG ROAD

PH
1643

Index Map



- NATURAL GAS PIPELINE (QUERIED)
- PREFERRED ACCESS-NO IMPROVEMENTS
- NHESP POTENTIAL VERNAL POOL
- NHESP CERTIFIED VERNAL POOL
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

LANCASTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

LANCASTER,TOWN OF
1250 LUNENBURG RD

W-MJR-18

LUNENBURG ROAD

PH 561

221

222

LINE 343

S-MJR-7

W-MJR-16

S-MJR-7

S-MJR-7

223

224

W-MJR-14

W-MJR-14

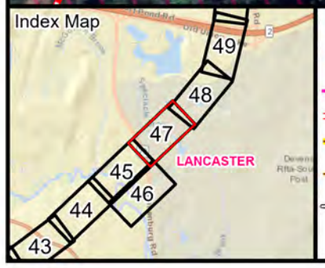
225

W-MJR-15

ROAD TO FORT DEVENS
INTERNAL ROAD SYSTEM

LANCASTER

Index Map



- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- NATURAL GAS PIPELINE (QUERIED)
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- TOP OF BANK/OHW LINE
- DELINEATED STREAM CENTERLINE
- COLDWATER FISHERY
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

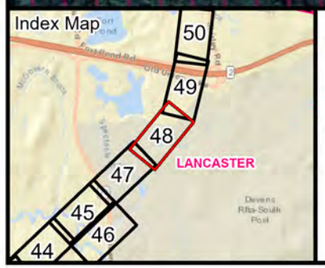
LANCASTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



- REPLACE INSULATORS (PHASE 1); REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- LINE 343
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
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1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

LANCASTER, MA

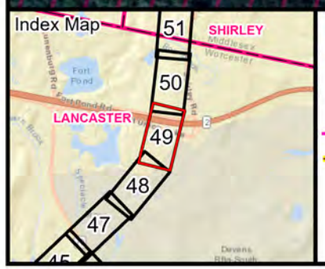
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

FIRE ROAD EIGHT
STAGECOACH ROAD
MCKENNA MICHAEL P & COLLETE A 116 STAGE COACH RD
NAGLE RUSSELL J & VERONICA A 76 STAGE COACH RD
RICHARDSON JANE B 50 STAGE COACH RD
MCCOY CHRISTOPHER 100 STAGE COACH RD
LAFOND ANN M TR 26 STAGE COACH RD
REVELL PAULE & CATHERINE R 10 STAGE COACH RD
RW FORT POND REALTY LLC 680 FORT POND RD
W-KCF-21
230
231
232
233
234
235
LINE 343
OLD UNION TURNPIKE
HAMEL CHRISTOPHER R & JANELLE D 141 OLD UNION TURNPIKE
ROUTE 3
FORT POND ROAD
W-KCF-21
LANCASTER
ROAD TO FORT DEVENS INTERNAL ROAD SYSTEM
REVELL AARON R & AMY K 64 OLD UNION TURNPIKE
CHISHOLM WILLIAM D TR 696 FORT POND RD
RAMP FORT P (SHIRLEY RD) TO RT 2 WB

Index Map


- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
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Base Map: Google Imagery

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

LANCASTER, MA

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

RW,FORT POND REALTY LLC 580 FORT POND RD

CHISHOLM,WILLIAM D TR 696 FORT POND RD

CHISHOLM,W D,TR O SHIRLEY RD

LANCASTER

W-KCF-21

W-KCF-21

235

236

237

LINE 343

238

239

240

240

CHISHOLM,WILLIAM D TR O CHISHOLM TRAIL

EVELYN PLACE

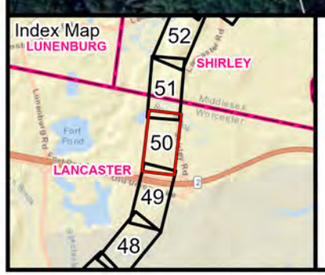
GRANT WAY

CHISHOLM TRAIL

BARRETT,MICHAEL C 1904 SHIRLEY RD

SHIRLEY ROAD

Index Map



- REPLACE INSULATORS (PHASE 1); REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- INSTALL REPLACEMENT STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- STRUCTURE TO BE REMOVED
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- PULL PAD
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- TOWN BOUNDARY

N

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0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

LANCASTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

CHISHOLM,W,D TR
0 SHIRLEY RD

CHISHOLM,WILLIAM D
TR 0 CHISHOLM TRAIL

NEW ENGLAND POWER CO
400 MOUNT LAUREL CR

LPC FAMILY LLC
800 MOUNT LAUREL CR

ARSENAULT, JOSEPH C.
91-93 LANCASTER RD

PJ KEATING CO ATT: ACCT PAYABLE 0 LANCASTER RD

S-JMT-1

MOUNTAIN LAUREL REALTY
0 MOUNT LAUREL CR

240 240 241 242 243 244

LINE 343

D-KCF-1

D-KCF-1

BROWN, MARCOMBE H.
67 LANCASTER RD

W-JMT-6

W-KCF-22

S-JMT-1

WARREN, BRUCE
0 MOUNT LAUREL CR

S-JMT-1

LAZARO, RICHARD J.
MANAGER 0 MOUNT LAUREL CR

LANCASTER

SHIRLEY

LPC FAMILY LLC
300 MOUNT LAUREL CR

BARRETT MICHAEL C
1964 SHIRLEY RD

WARREN, BRUCE D & GOODENOUGH PAULA D 1990 SHIRLEY RD

LPC FAMILY LLC
0 LANCASTER RD

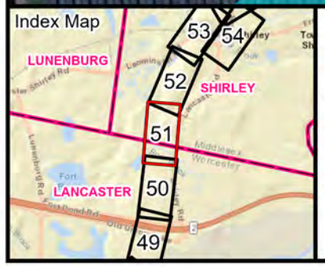
MOUNT LAUREL CIRCLE

POLAND, RONALD J.
75 LANCASTER RD

SHIRLEY ROAD

LANCASTER ROAD

Index Map



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- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
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- PREFERRED ACCESS-NO IMPROVEMENTS
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- PARCEL BOUNDARY
- TOWN BOUNDARY

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1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHIRLEY & LANCASTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

P.J.KEATING CO.AT ACCT PAYABLE 0 LANCASTER RD

LEOMINSTER ROAD

PH 1738

W-KCF-20

UNKNOWN OWNER 0 LEOMINSTER RD

NEW ENGLAND COMPANY 0 LEO

D-KCF-1

D-KCF-1

245

246

LINE 343

247

248

249

W-JMT-6

W-KCF-20

SHIRLEY

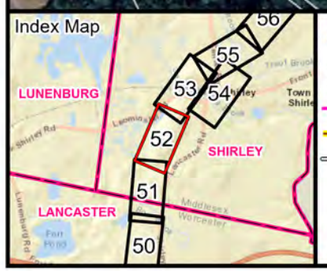
PELLEGRINI-CIVIELLO E., TTE 33 LANCASTER RD

BROWN, MARCOMBE H. 67 LANCASTER RD

POLAND, RONALD J. 75 LANCASTER RD

ARSENAULT, JOSEPH C. 91-93 LANCASTER RD

Index Map



- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
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- NHESP ESTIMATED HABITAT - 2021
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1 inch = 200 Feet

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHIRLEY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

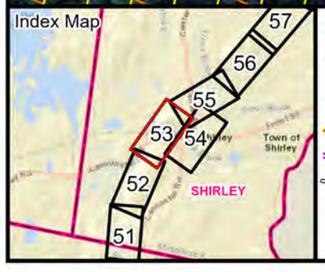
nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

MOUNT HENRY ROAD
COTTAGE STREET
CATACUNEMAUG ROAD
LEOMINSTER ROAD
WENTWORTH, MARIANNE
0 CENTER RD
APPLE VALLEY HOMES
LLC 0 LEOMINSTER RD
BOSTON & MAIN R R 0 FRONT ST
DUNHAM MICHAEL S &
41 LEOMINSTER RD
UNKNOWN OWNER
0 LEOMINSTER RD
NEW ENGLAND POWER
COMPANY 0 LEOMINSTER RD
LINE 343
251
252
253
254
250
249
EH 1167
PH 1738
S-KCF-7
W-KCF-19
SHIRLEY
MORIN STREET
MUNSON AVENUE
PELLEGRINI,COVIELLO E.,
TTE33 LANCASTER RD

PICKUPS ONLY ON THIS ROAD. LANDOWNER APPROVAL IS REQUIRED PRIOR TO EACH TIME USED.

Index Map



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- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE S ROAD
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- LINE 343
- PULL PAD
- WORKPAD (GRADING REQUIRED)
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- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- TOP OF BANK/OHW LINE
- COLDWATER FISHERY
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHIRLEY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

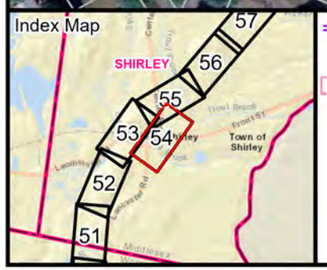
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

EH 1167
PH 1738
WENTWORTH MARIANNE
0 CENTER RD
PH 1738
NEW ENGLAND POWER COMP
LEOMINSTER ROAD
HASKELL STREET
MUNSON AVENUE
MAPLE STREET
CENTER ROAD
LANCASTER ROAD
MAIN STREET
SHIRLEY
DAVIS STREET
HARVARD ROAD
SOUTH STREET
FREDONIAN STREET
BOSTON & MAIN
R R 0 FRONT ST
CHURCH STREET
FRONT STREET
AYER ROAD
LEONARD STREET
MILL STREET
CHAPEL STREET
BENJAMIN ROAD

Index Map



- ALTERNATE
- NHESP POTENTIAL VERNAL POOL
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHIRLEY, MA

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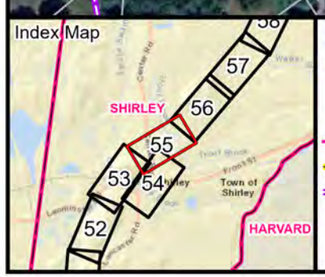
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

MOSLAND DRIVE
SOLTESZ, JANE
E 73 CENTER RD
ROGALSKI, PETER
J 68 CENTER RD
NEW ENGLAND POWER COMPANY O BENJAMIN RD
WENTWORTH, MARIANNE
O CENTER RD
W-KCF-18
PH
1738
W-KCF-16
S-KCF-6
256
255
254
257
LINE 343
258
W-GAR-100
260
S-KCF-6
W-KCF-17
259
BENJAMIN ROAD
STAPEL, RICHARD
T 50 CENTER RD
CENTER ROAD
SHIRLEY
NEW ENGLAND POWER COMPANY O CENTER RD
W-KCF-16
O'CONNOR, BRANDON
M 46 BENJAMIN RD

Index Map



- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- ALTERNATE
- LINE 343
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- NHESP CERTIFIED VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
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Feet

LINE 313/343 & O141/P142

FIGURE 2
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SHIRLEY, MA

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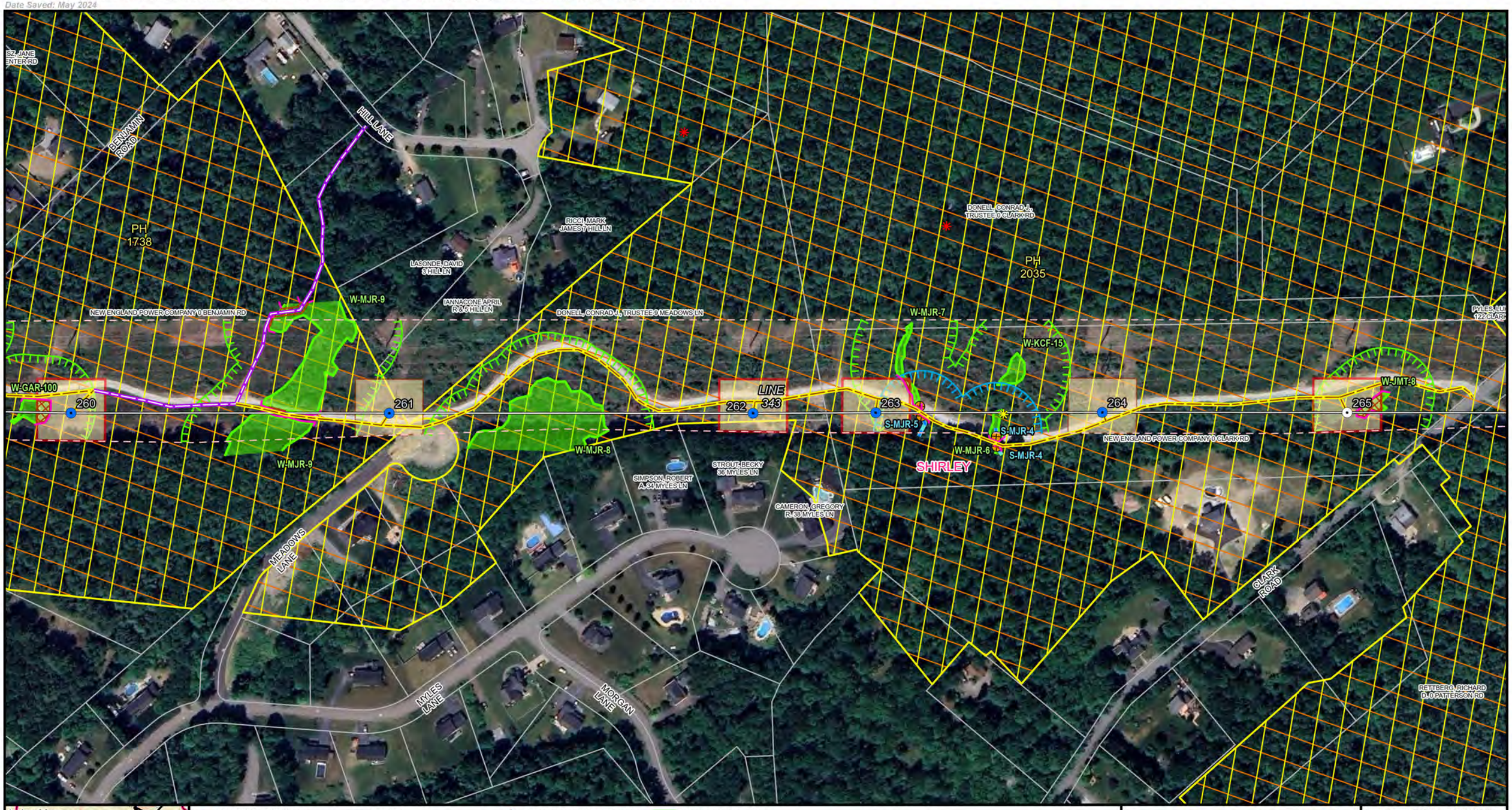
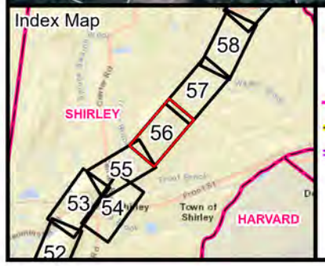
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)





- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHIRLEY, MA

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Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

PYLES, LUKE A.
122 CLARK RD

CLARK ROAD

BIRD, MARK
121 CLARK RD

BERTOZZI, PETER
127 CLARK RD

DONELL, CONRAD J., TRUSTEE
0 CLARK RD

NEW ENGLAND POWER COMPANY
0 CLARK RD

W-JMT-8

W-KCF-14

SHIRLEY

PH 2035

W-KCF-13

W-KCF-12

S-KCF-4

W-KCF-11

HAZEN ROAD

ROSS, MATTHEW
877 HAZEN RD

REILLY, MATTHEW
81 HAZEN RD

266

267

LINE 343

268

269

S-KCF-5

SKERRY, PAUL W.
83 HAZEN RD

RHODES, GARRY A.
75 HAZEN RD

PATTERSON ROAD

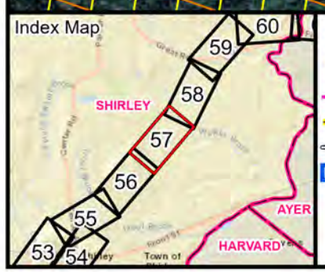
RETTBERG, RICHARD
0 PATTERSON RD

RETTBERG, RICHARD
0 CLARK RD

RETTBERG, RICHARD
0 HAZEN RD

TOWN OF SHIRLEY
0 HAZEN RD

Index Map



- ACCESS GATE
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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

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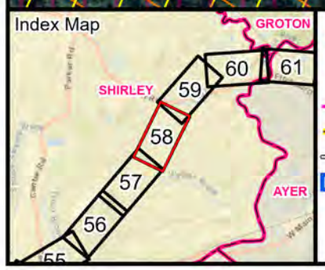
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

ROSS, MATTHEW & 77 HAZEN RD
ROBERTSON ROAD
CATHERINES WAY
HORSE POND ROAD
PH 2035
NEW ENGLAND POWER COMPANY 0 HAZEN RD
RHODES, GARRY A 75 HAZEN RD
REILLY, MATTHEW & 81 HAZEN RD
S-KCF-4
S-MJT-1
SKERRY, PAUL W 83 HAZEN RD
PINEDA, JASON & 85 HAZEN RD
W-KCF-11
W-KCF-11
269
270
271
272
LINE 343
273
274
GRACE, THOMAS & 7 CATHERINE S WY
BOURGAULT, MICHAEL E 9 CATHERINE S WY
BELLOMO, THOMAS J & 13 CATHERINE S WY
LINNANE INVESTMENT TRUST 15 CATHERINE S WY
ZAJAC, PAUL A V 156 WALKER RD
KUCALA, JERRY H 79 HORSE POND RD
W-KCF-9
V-GAR-11
FREEMAN, CHRISTOPHER & 11 CATHERINE S WY
HAZEN ROAD
V-GAR-2
W-KCF-10
SHIRLEY
DEAN, DAVID B 96 HAZEN RD
GONCALVES, ESTEVAO BARBOSA 4 AMANDA LN
HECK, HEIDI G & 6 AMANDA LN
RUSSELL, DAVID K 8 AMANDA LN
CORMIER, JORDAN D 10 AMANDA LN
GOULART, PAULO J 12 AMANDA LN
NEW ENGLAND POWER COMPANY 0 GREAT RD
KIM, BOK-ZA 93 HAZEN RD
RETTBERG, RICHARD D 0 HAZEN RD
TOWN OF SHIRLEY 0 HAZEN RD
PH 2035
AMANDA LANE
WALKER ROAD
HEBERT LANE

Index Map



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- TOWN BOUNDARY

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1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

SHIRLEY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

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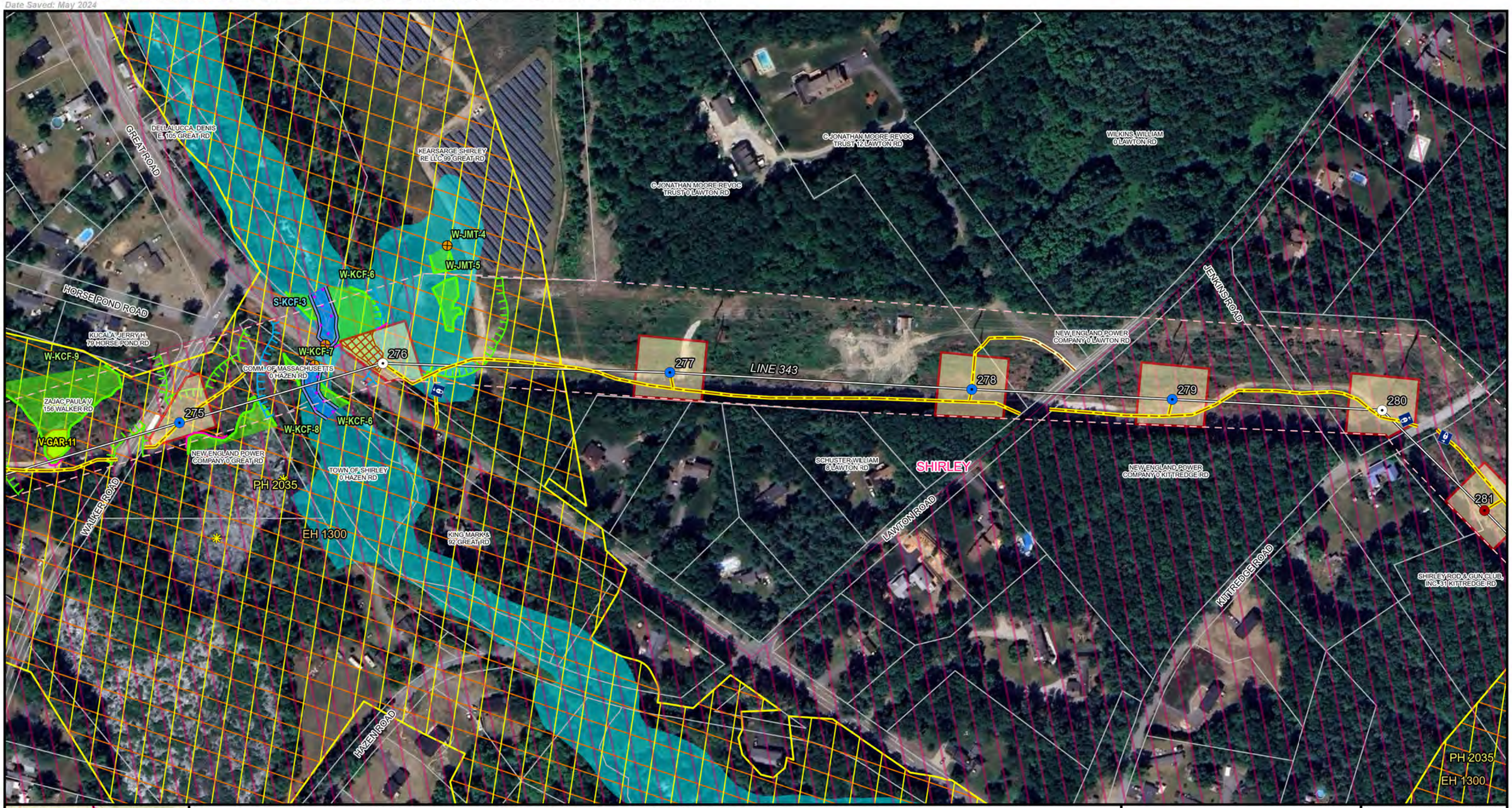

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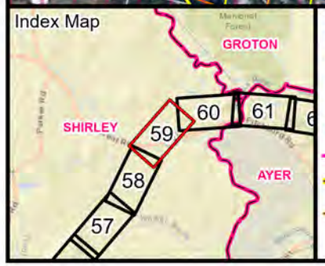

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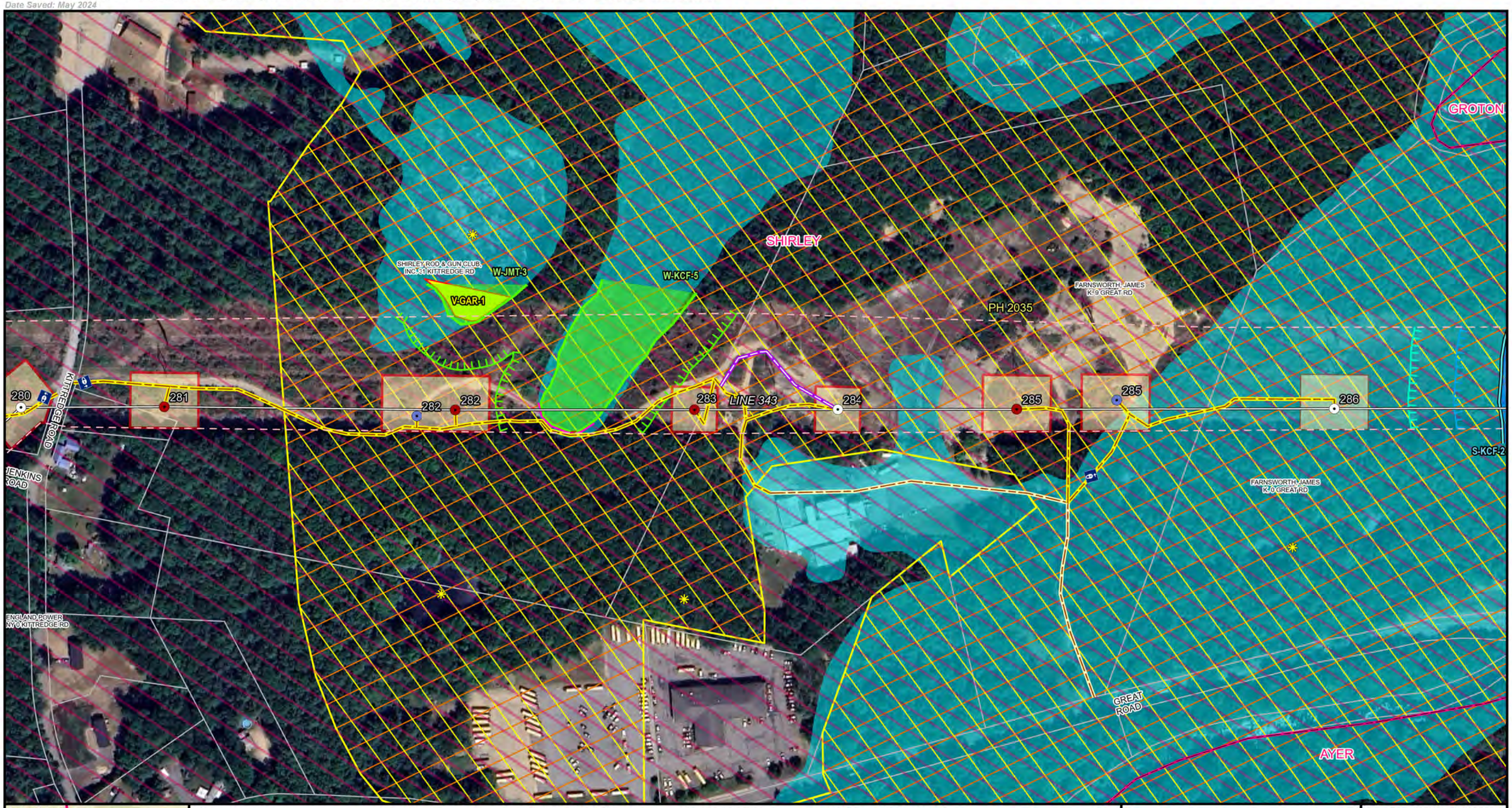

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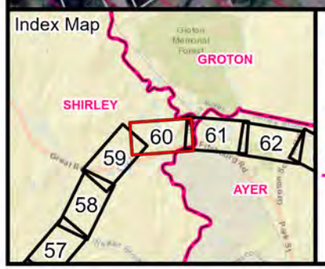

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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

AYER & SHIRLEY, MA

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nationalgrid TRC

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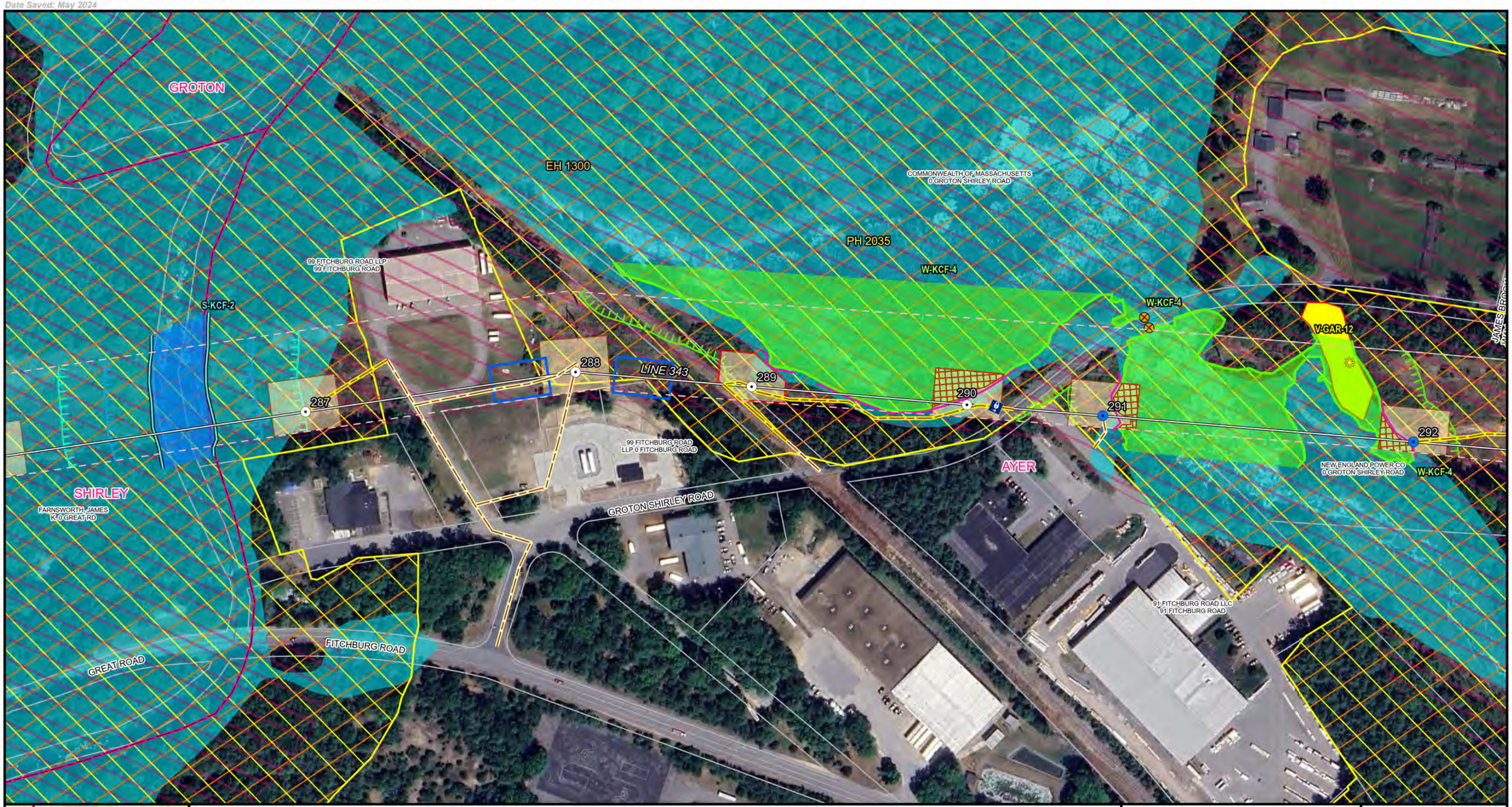

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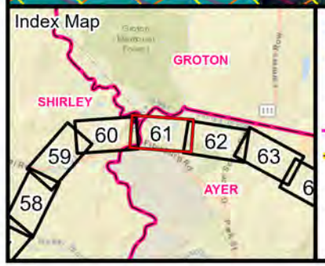

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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

AYER & SHIRLEY, MA

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nationalgrid

TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

COMMONWEALTH OF MASSACHUSETTS
0 GROTON SHIRLEY ROAD

JAMES BROOK WAY

GROTON SHIRLEY ROAD

WOZNAC MICHAEL W - JT
22 GROTON SHIRLEY ROAD

CHITRA KARKI
24 GROTON SHIRLEY ROAD

REYNOLDS GARY M
20 GROTON SHIRLEY

GORDON KEVIN M
18 GROTON SHIRLEY ROAD

GRIFFIN PATRICK M
OTON SHIRLEY ROAD

RAJAGOPALAN GANESAN - TE
26 GROTON SHIRLEY ROAD

MULDOON FREDERICK W - TE
9 GROTON SHIRLEY ROAD

KELLY SANDRA M
91 GROTON SCHOOL ROAD

GOODWIN JESSE F
12 GROTON SHIRLEY ROAD

W-KCF-2

W-GAR-12

292 293 294 LINE 343 295 296 297 298

W-KCF-4

NEW ENGLAND POWER CO
0 GROTON SHIRLEY ROAD

EH 1300

PH 2035

NEW ENGLAND POWER CO
0 GROTON SCHOOL ROAD

AYER

ANDERSON MARK S - TE
84 OFF GROTON SCHOOL ROAD

OFF GROTON SCHOOL ROAD

GROTON SCHOOL ROAD

ROSEWOOD AVENUE

PHEASANT CIRCLE

HBURG ROAD LLC
TCHBURG ROAD

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GROTON
60 61 62 63 64
AYER
SHIRLEY

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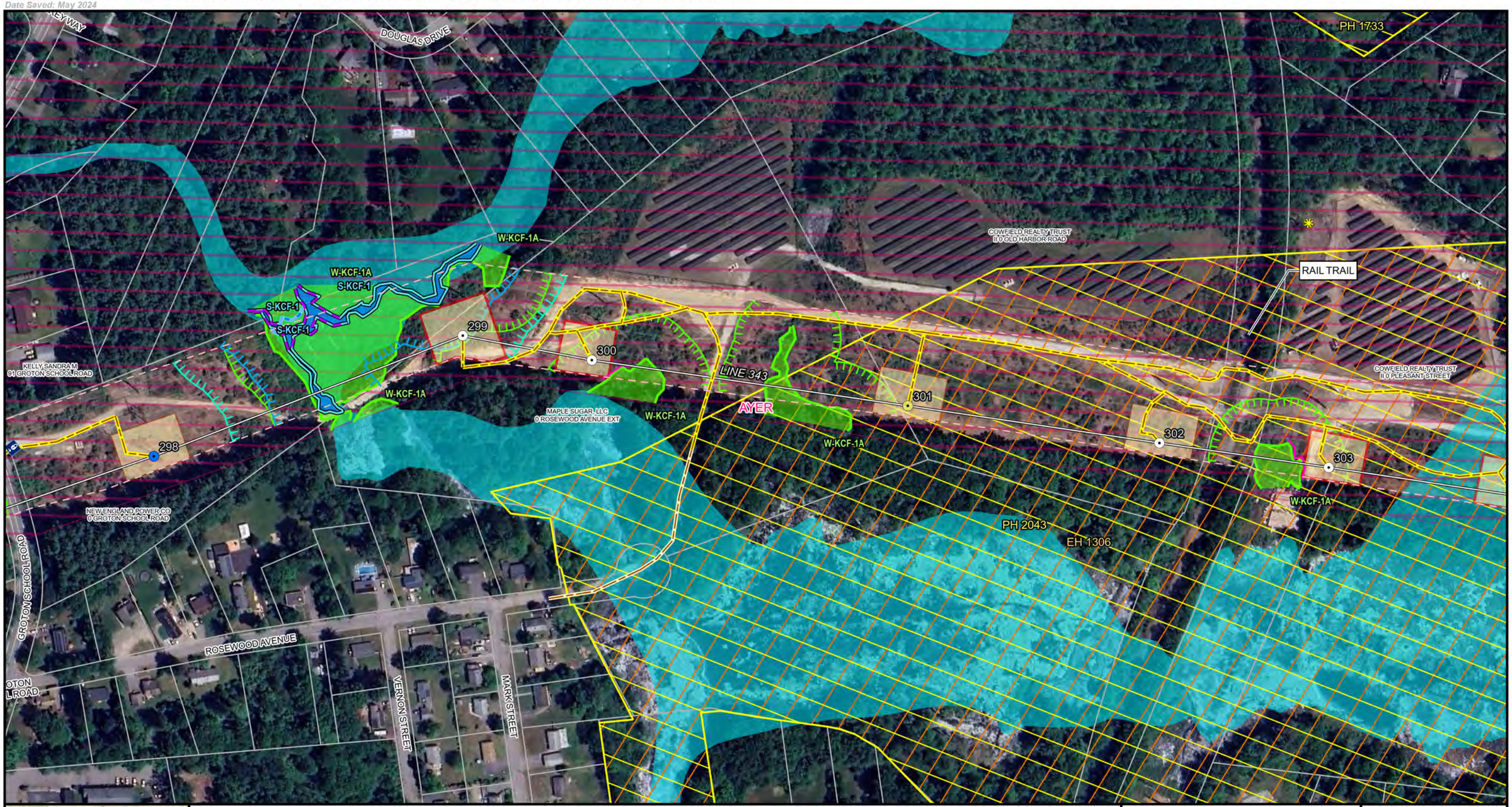

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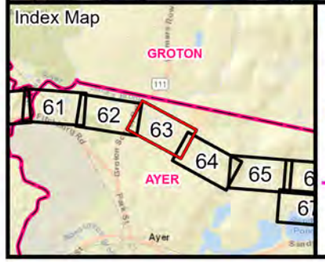

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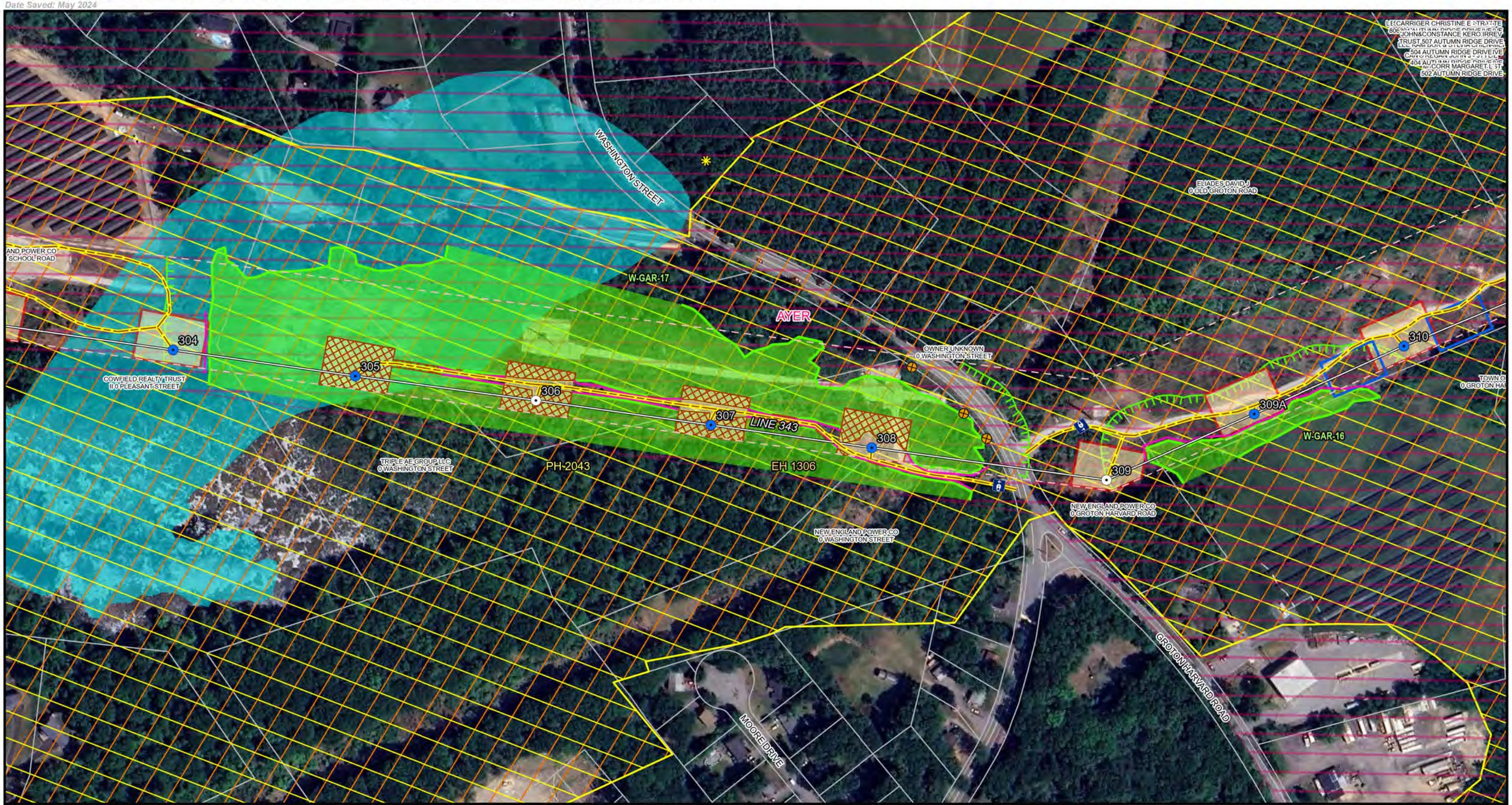

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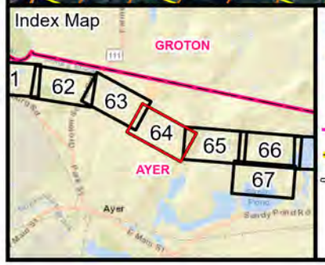

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LINE 313/343 & O141/P142

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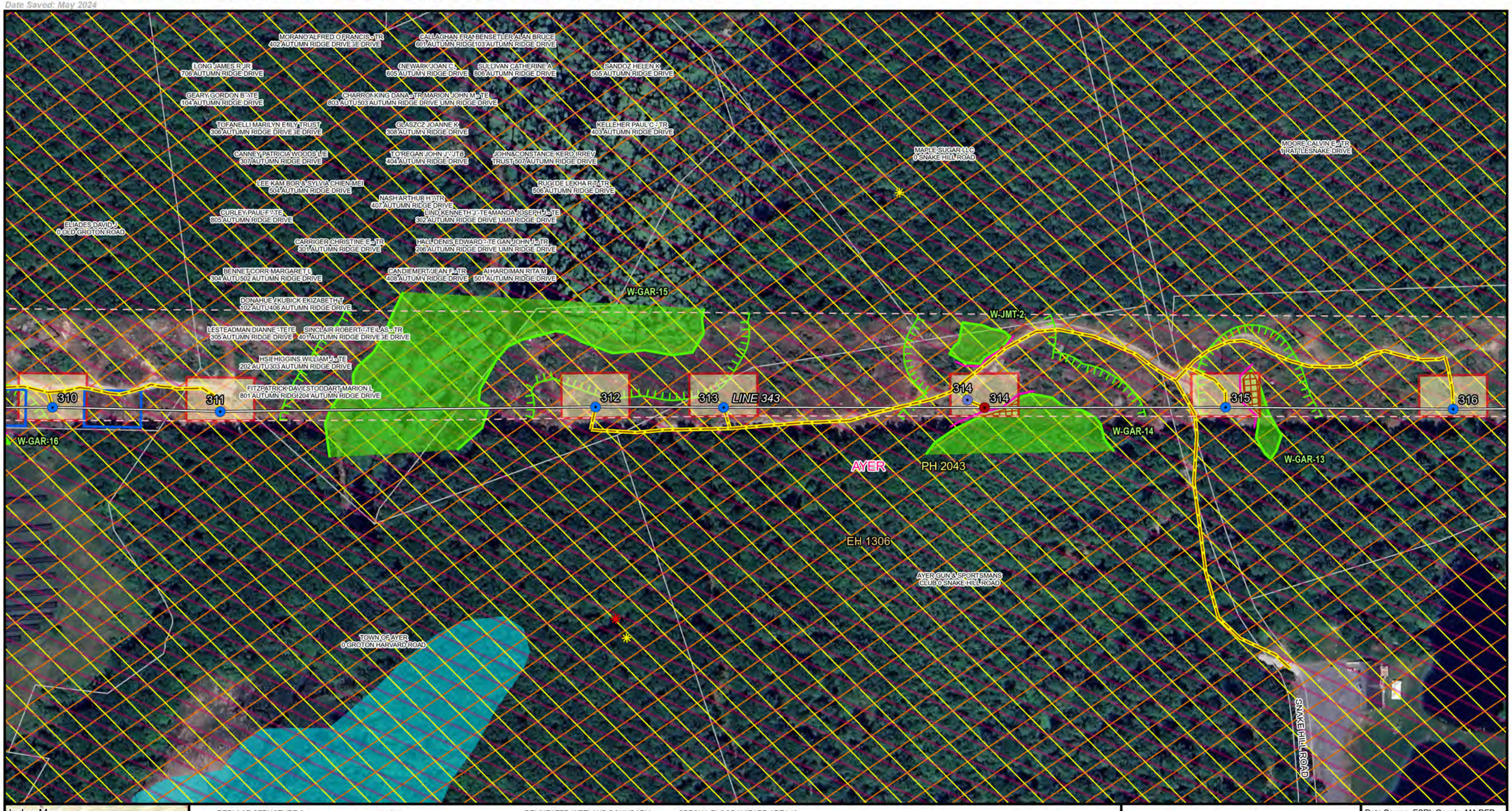

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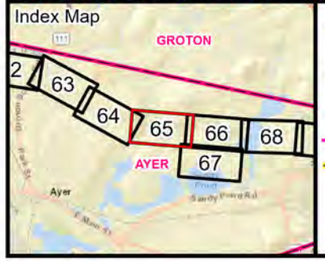

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MOORE CALVIN E -TR
1 RATTLESNAKE DRIVE

FOX MEADOW REALTY CORP
0 STRATTON HILL ROAD

NEW ENGLAND POWER CO
0 SNAKE HILL ROAD

AYER GUN & SPORTSMANS CLUB
0 WRIGHT ROAD

W-GAR-12
W-GAR-11
W-GAR-10

316
317
318
319
320
321

LINE 343

AYER GUN & SPORTSMANS CLUB
0 SNAKE HILL ROAD

V-GAR-18
W-GAR-11
V-GAR-13
W-GAR-10
W-GAR-9

PH 2043

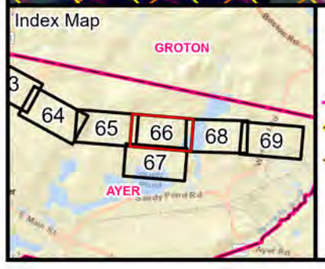
AYER

EH 1306

TOWN OF AYER
0 WRIGHT ROAD

LINDLEY DRIVE

Index Map



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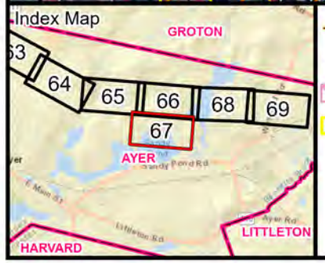

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EH 1306
PH 2043
W-GAR-9
322
323
324
325
326
LINE 343
S-GAR-7
AYER
ORCHID LANE
TURTLE HILL ROAD
LOON HILL ROAD
SUNFLOWER COURT
ROSE LANE
IRIS AVENUE
HIBISCUS LANE
WINTERBERRY LANE
MULBERRY CIRCLE
MAGNOLIA DRIVE
LINDLEY DRIVE
SNIEGOSKI ROBERT J-THEODORE M -TE
16 TURTLE HILL ROAD #B ILL ROAD #B
DAY MOLLY
3 TURTLE HILL ROAD #B
SUSI ALAN F
18 TURTLE HILL ROAD #A
WILCOX KENNETH J -
TE 16 HIBISCUS LANE
SHARKEY PAUL J
15 HIBISCUS LANE
FLINT LINNEA S TRUST
4 TURTLE HILL ROAD #B
MCLAUGHLIN PETER C & DEBORAH
- TR 11 TURTLE HILL ROAD #B
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0 STRATTON HILL ROAD
LANDERS ELIZABETH R
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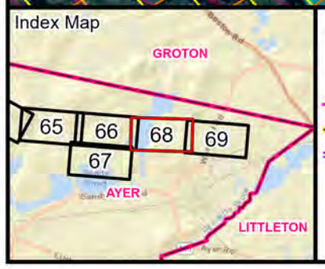
WHITCOMB RYAN CHANDLE
14 TURTLE HILL ROAD #A
MASUDI SALOME H JYUJING
4 TURTLE HILL ROAD #A ILL ROAD #A
GUPTA MAYANK
18 TURTLE HILL ROAD #B
DOLAN KATHLEEN R - TR JEFFERY L
1 TURTLE HILL ROAD #B HILL ROAD #B
TRAGNAM PATRICIA
11 TURTLE HILL ROAD #A
BROUGHTON RUTH E - TR - SANDISON MARILYN L
16 TURTLE HILL ROAD #A - 9 TURTLE HILL ROAD #B
SULLIVAN ELAINE M -TE
14 TURTLE HILL ROAD #B
OWNER UNKNOWN
0 SNAKE HILL ROAD
LY ANH QUOC - TE
14 HIBISCUS LANE
BUTTRICK KATHRYN L -
TR 12 HIBISCUS LANE
BOISSEAU LAWRENCE J -
TE 11 HIBISCUS LANE
TITI GERARD W
5 TURTLE HILL ROAD #B
ADELMAN MERLE
6 TURTLE HILL ROAD #B
OLSON SUSANNE ZIDE - JULIE
12 TURTLE HI 8 TURTLE HILL ROAD #A
CULLEN BRIAN
2 TURTLE HILL ROAD #A
CALI MICHAEL J
8 TURTLE HILL ROAD #B
MILUTINOVIC ALADIN
7 TURTLE HILL ROAD #A
COSTA ALLAN T - TE
3 TURTLE HILL ROAD #A
SHUGERT PETER H
5 TURTLE HILL ROAD #A
TRAVAGLINI JAN HALL DEBRA L
1 TURTLE HIL 7 TURTLE HILL ROAD #B
TOWN OF AYER
0 WRIGHT ROAD

Index Map



- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- ALTERNATE
- LINE 343
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

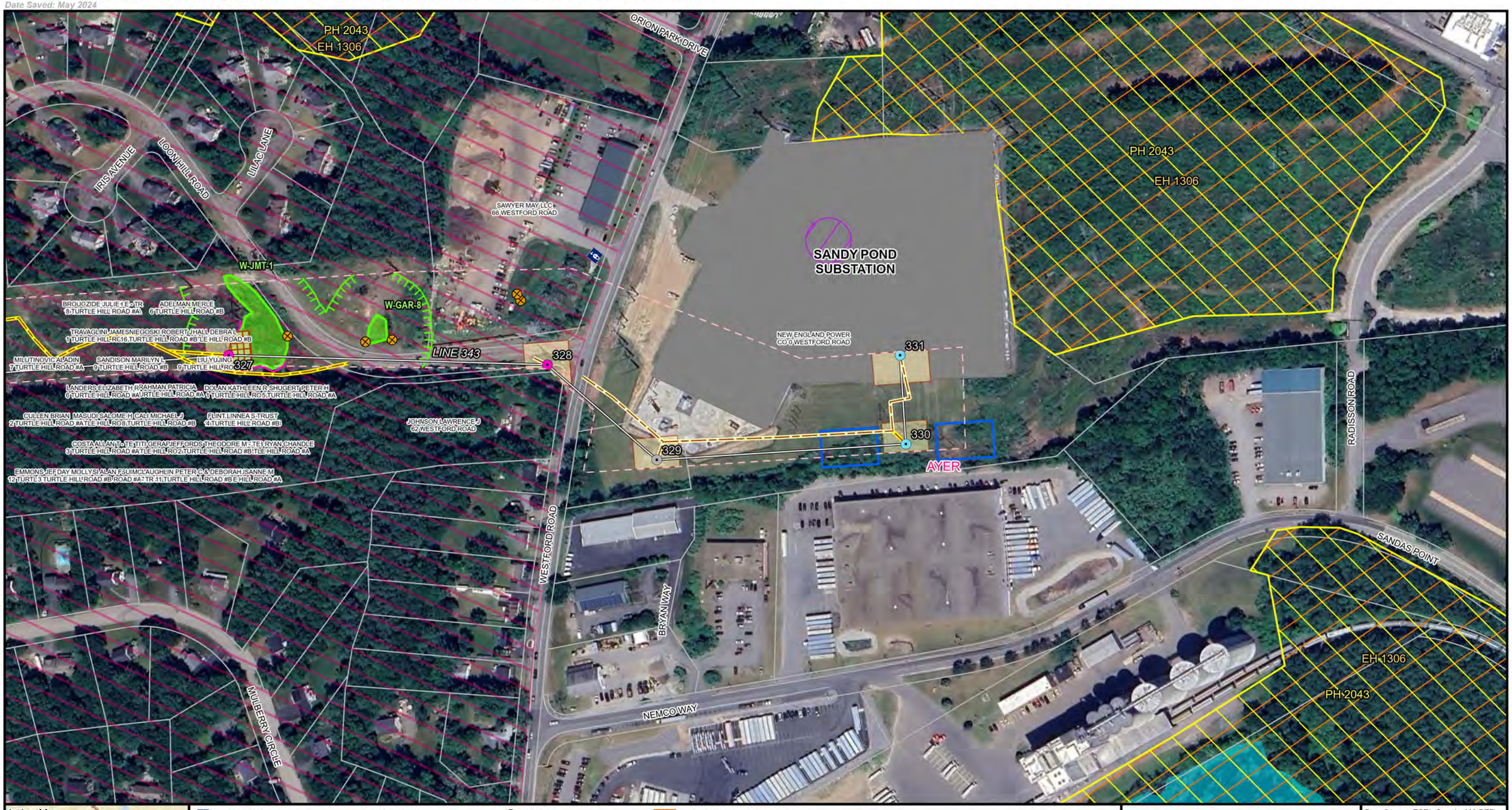
AYER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

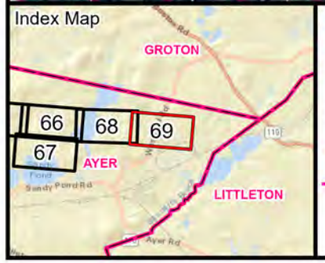
Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map



- ACCESS GATE
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

AYER, MA

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Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

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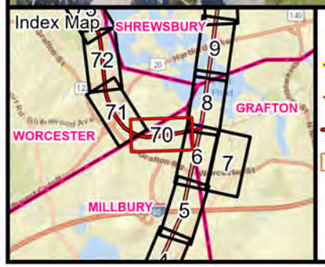


- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- P142S
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- INTERMITTENT STREAM (DEP 25K)
- MADEP WETLAND (2005)*
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

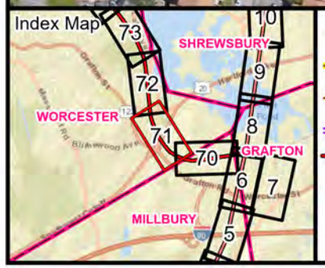
MILLBURY, GRAFTON, & WORCESTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- P142S
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 25-FOOT URBAN RIVERFRONT AREA
- INTERMITTENT STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WORCESTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

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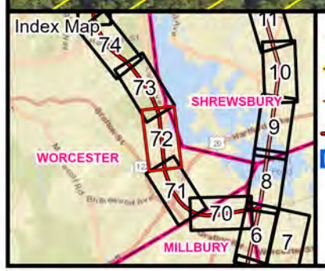

- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- P142S
- PULL PAD
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 25-FOOT URBAN RIVERFRONT AREA
- INTERMITTENT STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- NHESP PRIORITY HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

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1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WORCESTER & SHREWSBURY, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

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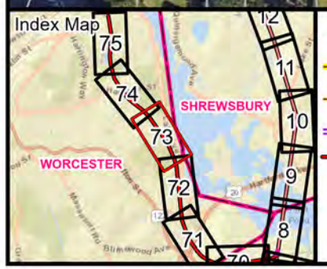

- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- P142S
- PULL PAD
- WORKPAD (NO GRADING REQUIRED)
- NHESP CERTIFIED VERNAL POOL
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WORCESTER & SHREWSBURY, MA

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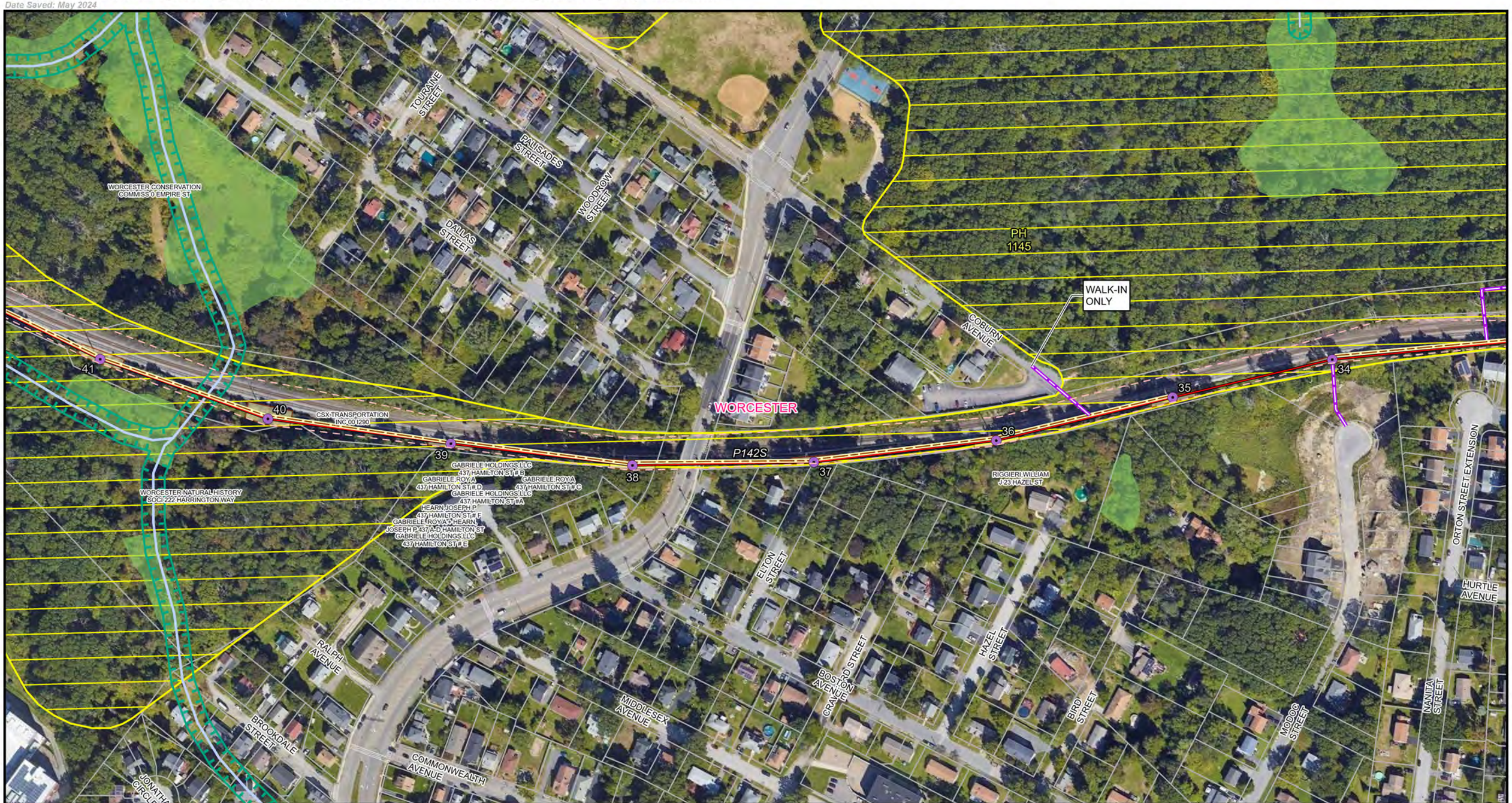
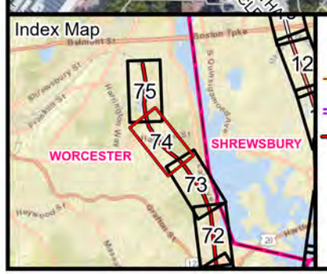
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)





- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- P142S
- WORKPAD (NO GRADING REQUIRED)
- 25-FOOT URBAN RIVERFRONT AREA
- INTERMITTENT STREAM (DEP 25K)
- MADEP WETLAND (2005)*
- NHESP PRIORITY HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WORCESTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

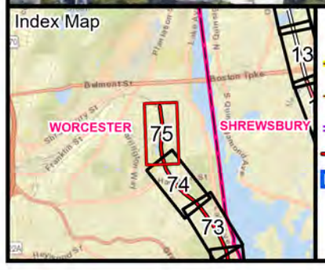
Base Map: Google Imagery

nationalgrid
TRC

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

ALVARADO AVENUE
LAKE VIEW STREET
ANNA STREET
LOCUST AVENUE
MINK CIRCLE
DALLAS STREET
WORCESTER CONSERVATION COMMISS 0 EMPIRE ST
CAPRON STREET
EASTVIEW APARTMENTS ASSOCIATES 50 FRANK ST
WALK-IN ONLY
NEW ENGLAND POWER COMPANY 0029 WIGWAM AVE
WORCESTER
WORCESTER CONSERVATION COMMISSION 88 ANNA ST
BLOOMINGDALE SUBSTATION
FRANK STREET
46
47
45
P142S
41
48
44
43
42
CSX TRANSPORTATION INC 00 I290
PH 1145
GRINNELL EDGAR C + KOZLOWSKI ROSANNE + PAPAGNI NIHAYA F MICHAEL H 6 PAPAGNI CIR
SIMON MICHAEL 0000 NORTHBORO ST
PAPAGNI CIRCLE
APOSTOLIC CHURCH BOSTON ASSEMBLY 0 HARRINGTON WAY
WORCESTER NATURAL HISTORY SOCI 222 HARRINGTON WAY
CHRISTINE DRIVE
POLLOCK STREET
FRANKLIN STREET
ANGELA ROSE LANE
NORTHBORO STREET
MARLBORO STREET
BIGELOW LANE

Index Map


- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- P142S
- PULL PAD
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 25-FOOT URBAN RIVERFRONT AREA
- INTERMITTENT STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- NHESP PRIORITY HABITAT - 2021
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WORCESTER, MA

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

BRYANT STREET
BREMER STREET
HEMANS STREET
WILLIS STREET
DALY STREET
EDGEWORTH STREET
PRIOULX STREET
WHITTIER STREET
BYRON STREET
MILTON STREET
GLENNIE STREET
MILLBROOK STREET
GOLD STAR BOULEVARD
WEST BOYLSTON TERRACE
MILLBROOK PROPERTY OWNER LLC 53 MILLBROOK ST
MILLBROOK PROPERTIES MANAGEMEN 57 MILLBROOK ST
BOSTON+MAINE RAILROAD 49 MILLBROOK ST
BOSTON & MAINE CORPORATION 00 1190
HD DEVELOPMENT OF MARYLAND INC 130 GOLD STAR BLVD
WORCESTER
WORCESTER BUSINESS CENTER LLC 67 MILLBROOK ST
NASHUA STREET SUBSTATION
NEW ENGLAND POWER COMPANY 25 BYRON ST
BOSTON + MAINE RAILROAD CO 28 GARDEN ST
INTERSTATE 190
INTERSTATE 290
RAMP-RT 190 NB TO BURNCOAT ST
RAMP-BURNCOAT ST TO 290 WB
BARNARD ROAD
BURNCOAT TERRACE
ASHBURNHAM ROAD
301 BARBER AVENUE OWN
O141S
O141
65
64
66
63
67
62
68
61
69

Index Map

ACCESS GATE
REPLACE INSULATORS (LINE O141/P142)
REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
TYPE S ROAD
PREFERRED ACCESS-NO IMPROVEMENTS
ALTERNATE
O141
O141S
WORKPAD (NO GRADING REQUIRED)
POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
APPROXIMATE EDGE OF ROW
PARCEL BOUNDARY
TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

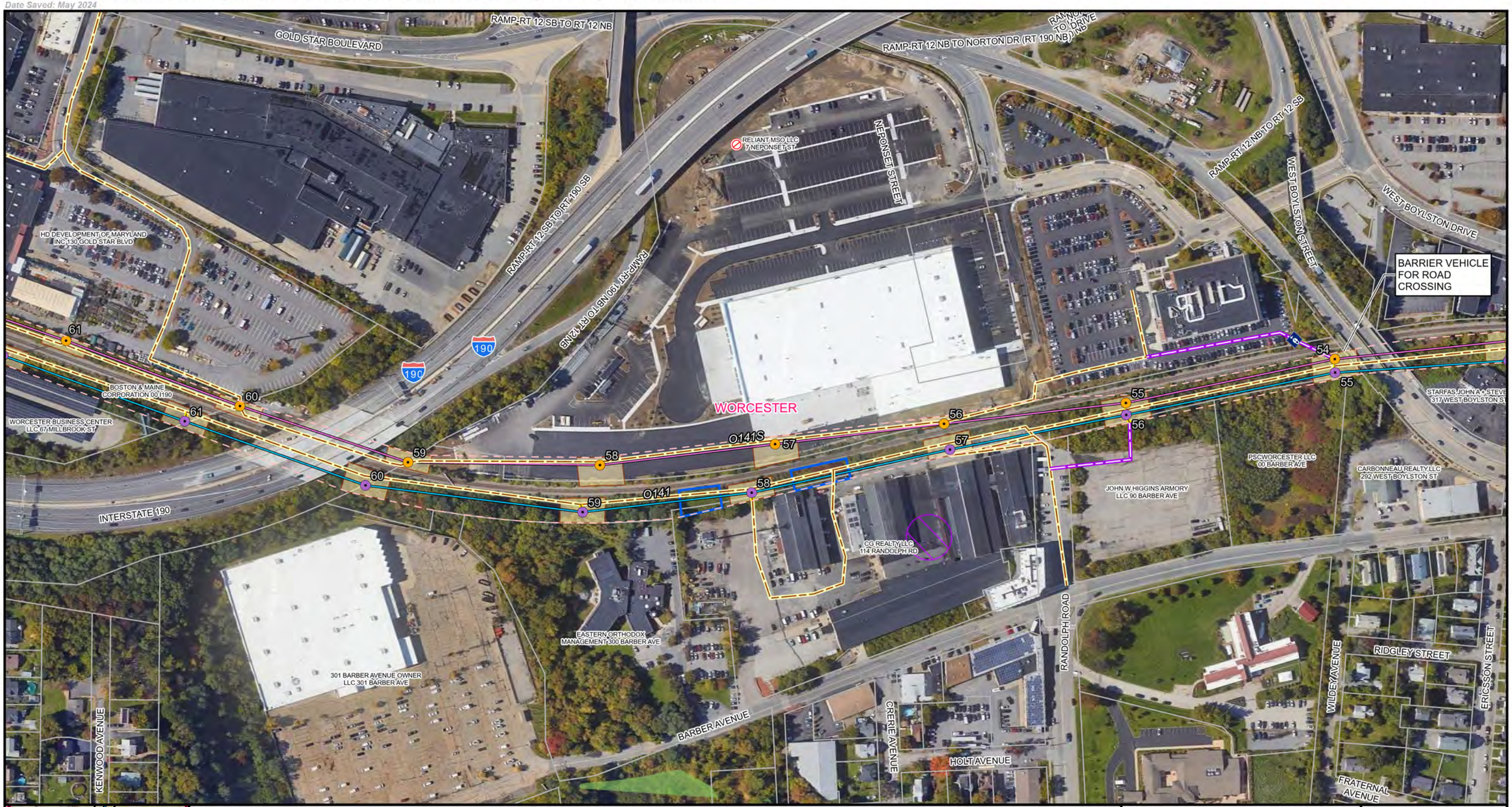
WORCESTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map

- ACCESS GATE
- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- O141
- O141S
- PULL PAD
- WORKPAD (NO GRADING REQUIRED)
- MADEP 21E SITE LOCATION
- MADEP WETLAND (2005)*
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

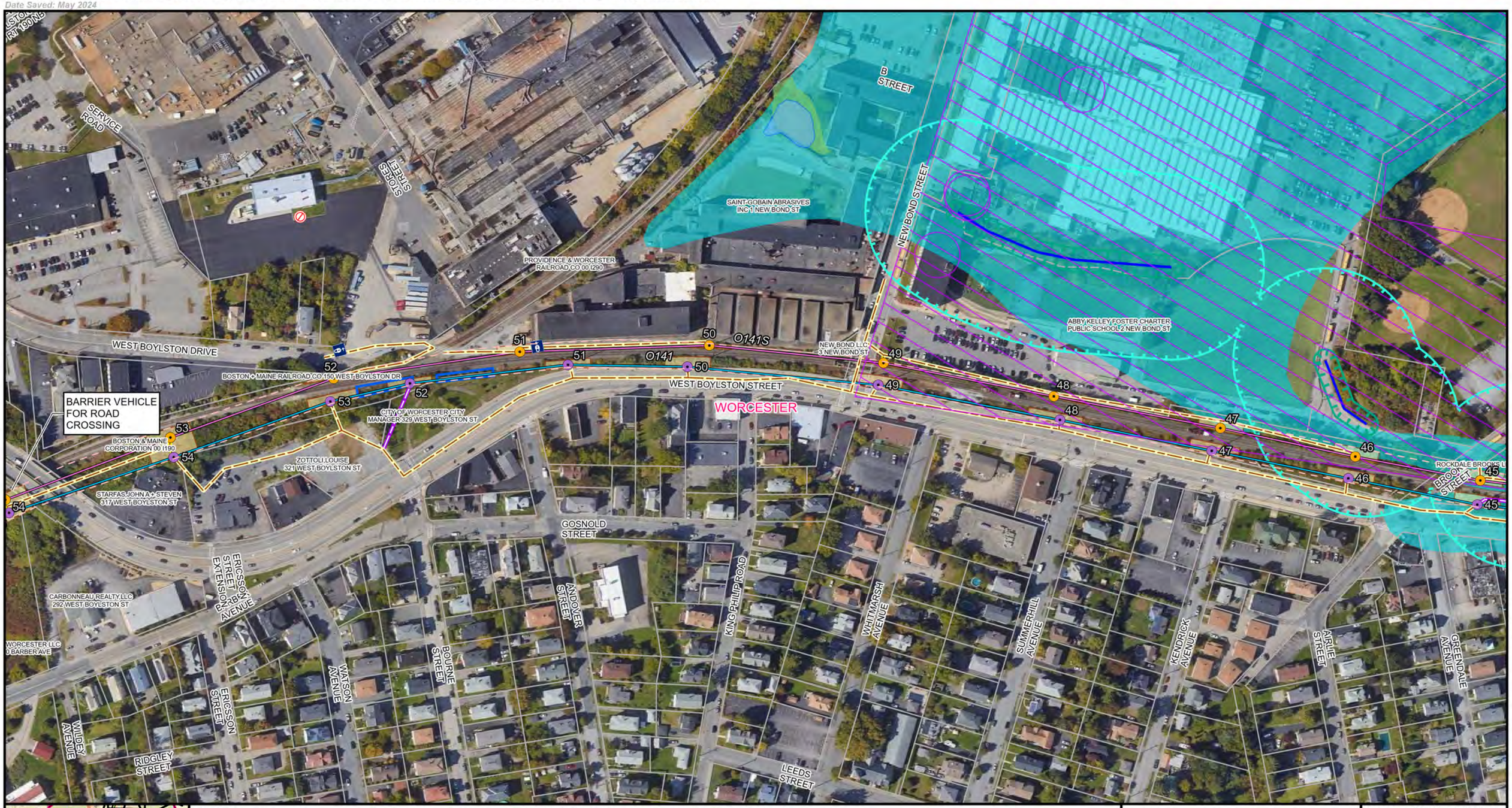
WORCESTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



- ACCESS GATE
- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- O141
- O141S
- PULL PAD
- WORKPAD (NO GRADING REQUIRED)
- MADEP 21E SITE LOCATION
- 25-FOOT URBAN RIVERFRONT AREA
- 200' PERENNIAL RIVERFRONT AREA
- PERENNIAL STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

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1 inch = 200 Feet

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Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WORCESTER, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

MOUNT AVENUE
WOBURN STREET
PRUDENCE STREET
MARSHFIELD STREET
BOXFORD STREET
STANLEY ROAD
EAMES ROAD
BEAMON AVENUE
BROOKS STREET
WORCESTER
ROCKDALE STREET
VELLUMOID INC 54 ROCKDALE ST
HIGGINS STREET
S-MBF-100
ROCKDALE BROOKS LLC 2 BROOKS ST
ROCKDALE BROOKS LLC 20 ROCKDALE ST
FRANCIS BROOKPARK LLC 40 ROCKDALE ST
O141S
O141
BOSTON & MAINE CORPORATION 00 1190
CF RC FUNDING IV LLC 2 EAMES RD
711 WEST BOYLSTON ST LLC 701 WEST BOYLSTON ST
ZOTTOLI 555 WEST B
MJK PROPERT 557 WEST BOY
KOMENOS MICHAEL JR 607 WEST BOYLSTON ST
WEST BOYLSTON STREET LLC 605 WEST BOYLSTON ST
LAM PHUONG 609A WEST BOYLSTON ST
GIBBS OIL COMPANY LTD PARTNERS 615 WEST BOYLSTON ST
WEST BOYLSTON STREET
TROTTIER STREET
ASSUMPTION AVENUE
GREENDALE AVENUE
FAIRHAVEN ROAD
FRANCIS STREET
FALES STREET
RANDALL STREET
AIRLIE STREET
LEEDS STREET
HYDE STREET
EMERSON ROAD

Index Map
HOLDEN
WORCESTER

- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- O141
- O141S
- WORKPAD (NO GRADING REQUIRED)
- CULVERT
- MADEP 21E SITE LOCATION
- 25-FOOT URBAN RIVERFRONT AREA
- 200' PERENNIAL RIVERFRONT AREA
- PERENNIAL STREAM (DEP 25K)
- DELINEATED SURFACE WATER
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
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LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WORCESTER, MA

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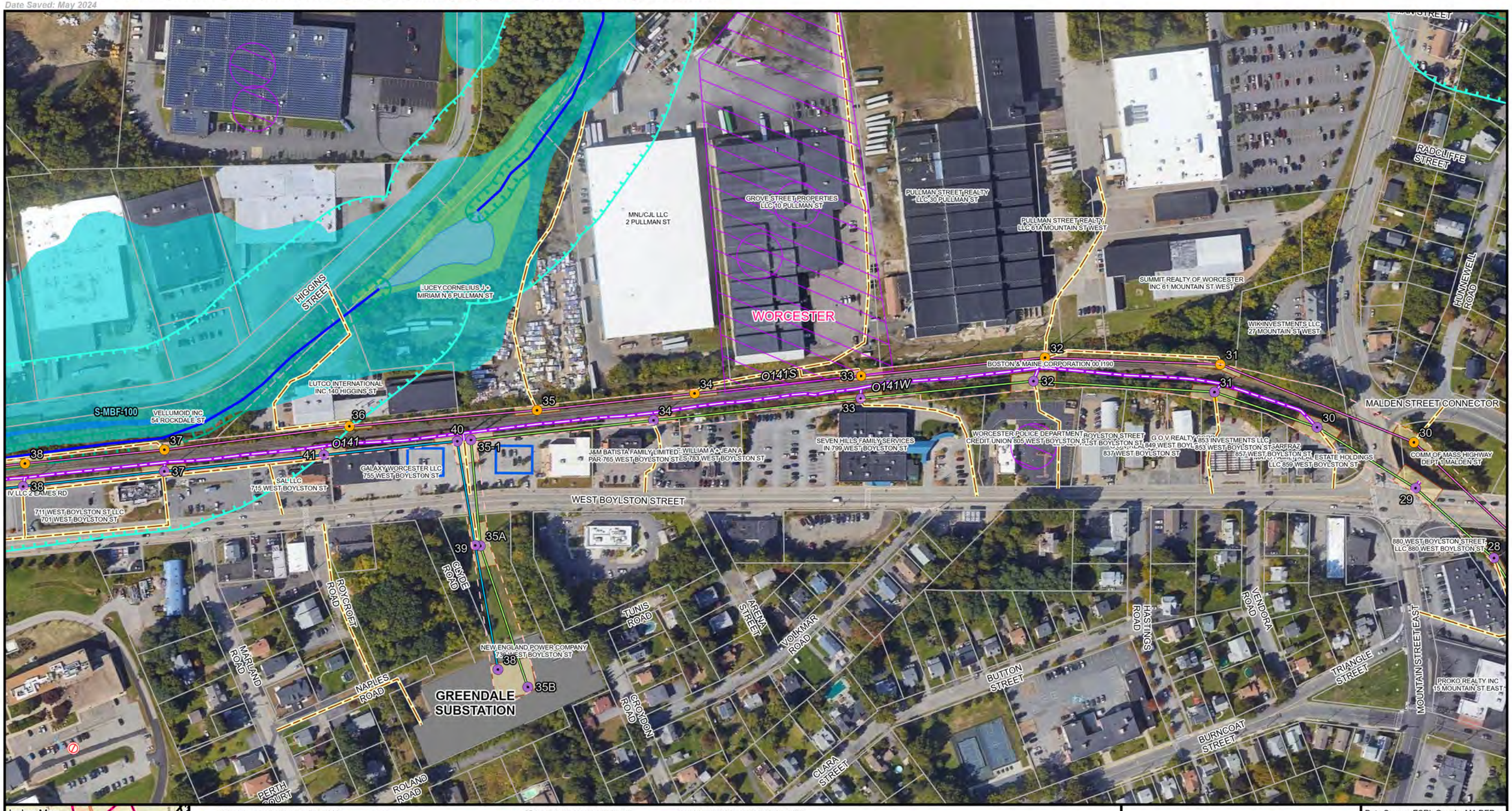
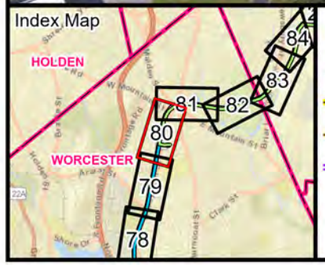
nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



Index Map



- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- O141
- O141S
- O141W
- PULL PAD
- WORKPAD (NO GRADING REQUIRED)
- MADEP 21E SITE LOCATION
- 25-FOOT URBAN RIVERFRONT AREA
- 200' PERENNIAL RIVERFRONT AREA
- PERENNIAL STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- DELINEATED SURFACE WATER
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
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LINE 313/343 & O141/P142

FIGURE 2
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WORCESTER, MA

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Base Map: Google Imagery

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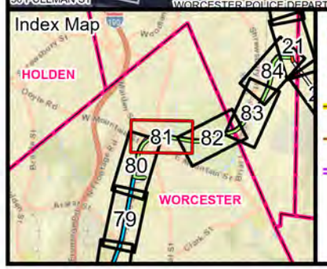
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- O141S
- O141W
- WORKPAD (NO GRADING REQUIRED)
- MADEP 21E SITE LOCATION
- NHESP POTENTIAL VERNAL POOL
- 25-FOOT URBAN RIVERFRONT AREA
- 200' PERENNIAL RIVERFRONT AREA
- PERENNIAL STREAM (DEP 25K)
- INTERMITTENT STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- POTENTIALLY CONTAMINATED SITE (NGRID, JUNE 20, 2019)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WORCESTER, MA

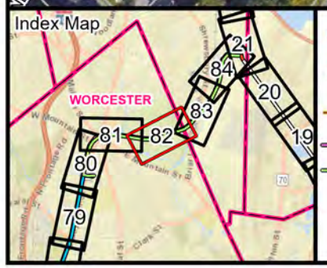
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

Index Map



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- PREFERRED ACCESS-NO IMPROVEMENTS
- O141S
- O141W
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 25-FOOT URBAN RIVERFRONT AREA
- 200' PERENNIAL RIVERFRONT AREA
- PERENNIAL STREAM (DEP 25K)
- INTERMITTENT STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

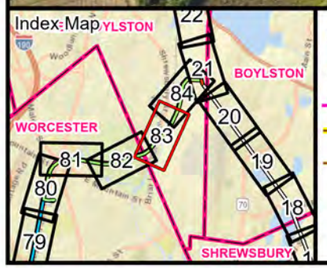
WORCESTER & WEST BOYLSTON, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- EROSION & SEDIMENT CONTROL
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- O141S
- O141W
- TIMBER MATTING
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- 200' PERENNIAL RIVERFRONT AREA
- MADEP WETLAND (2005)*
- DELINEATED STREAM CENTERLINE
- COLDWATER FISHERY
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- OUTSTANDING RESOURCE WATERS*
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

WORCESTER & WEST BOYLSTON, MA

Page 83 of 84

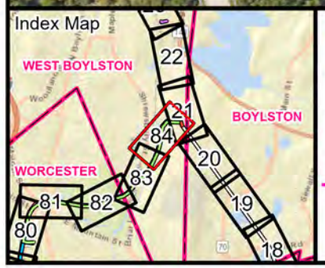
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

Index Map



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE STRUCTURE (LINE O141/P142
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- EROSION & SEDIMENT CONTROL
- NATURAL GAS PIPELINE
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S
- O141S/P142
- O141W
- O142/O141W
- O141W/P142W
- PULL PAD
- WORKPAD (GRADING REQUIRED)
- WORKPAD (NO GRADING REQUIRED)
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' BUFFER ZONE
- 200' PERENNIAL RIVERFRONT AREA
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- OUTSTANDING RESOURCE WATERS*
- NHESP PRIORITY HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY
- TOWN BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

LINE 313/343 & O141/P142

FIGURE 2
ACCESS PLANS

BOYLSTON & WEST BOYLSTON, MA

Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

Structure Scope based on O141/P142 ACR TSD (2/1/23) and Line 313/343 Phase 1 TSD (9/18/23)

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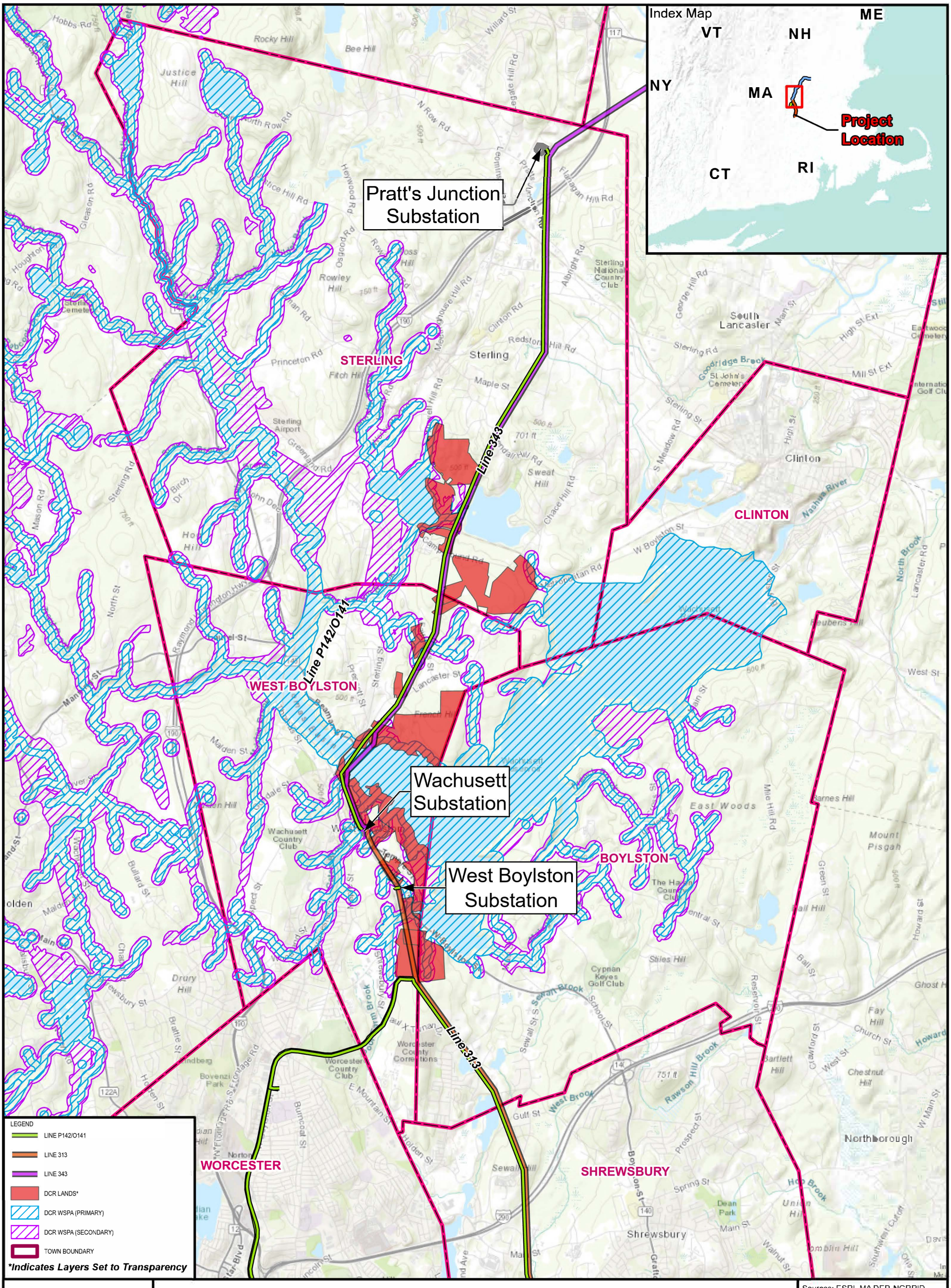


N

1:63,360

0 0.5 1 Miles

LINE 313/343 & P142/O141 PROJECTS, MILLBURY TO AYER

DCR LANDS

FIGURE **3**

Sources: ESRI, MA DEP, NGRRID, USGS

nationalgrid

Map Produced By TRC

TOWNSEND
PEPPERELL
DUNSTABLE
TYNGSBOROUGH
GROTON
LUNENBURG
SHIRLEY
WESTFORD
AYER
WESTMINSTER
LITTLETON
LEOMINSTER
HARVARD
LINE 343
BOXBOROUGH
ACTON
LANCASTER
PRINCETON
STERLING
BOLTON
STOW
CLINTON
P142N/O141N
WEST BOYLSTON
RUTLAND
HUDSON
SUDBURY
BERLIN
HOLDEN
BOYLSTON
MARLBOROUGH
O141W
NORTHBOROUGH
PAXTON
O141
O141S
O141S/P142
FRAMINGHAM
SOUTHBOROUGH
SHREWSBURY
WESTBOROUGH
WORCESTER
P142S
ASHLAND
LEICESTER
HOPKINTON
O141S/P142S
LINE 313
GRAFTON
HOLLISTON
AUBURN
MILLBURY
UPTON
CHARLTON
SUTTON
NORTHBRIDGE
OXFORD
UXBRIDGE

Legend

- O141
- O141S
- O141S/P142
- O141S/P142S
- O141W
- O142/O141W
- P142N/O141N
- P142S
- Proposed Connection - Line O141/P142
- Line 313
- Line 343
- One-Mile Radius from ROW
- Municipal Boundary

Environmental Justice Block Groups*

- Minority
- Income
- English Isolation
- Minority and Income
- Minority and English Isolation
- Income and English Isolation
- Minority, Income and English Isolation

Indicates Layers Set to Transparency

N

1:180,000

0 7,500 15,000

Feet

LINES O141/P142 & 313/343

Environmental Justice Areas

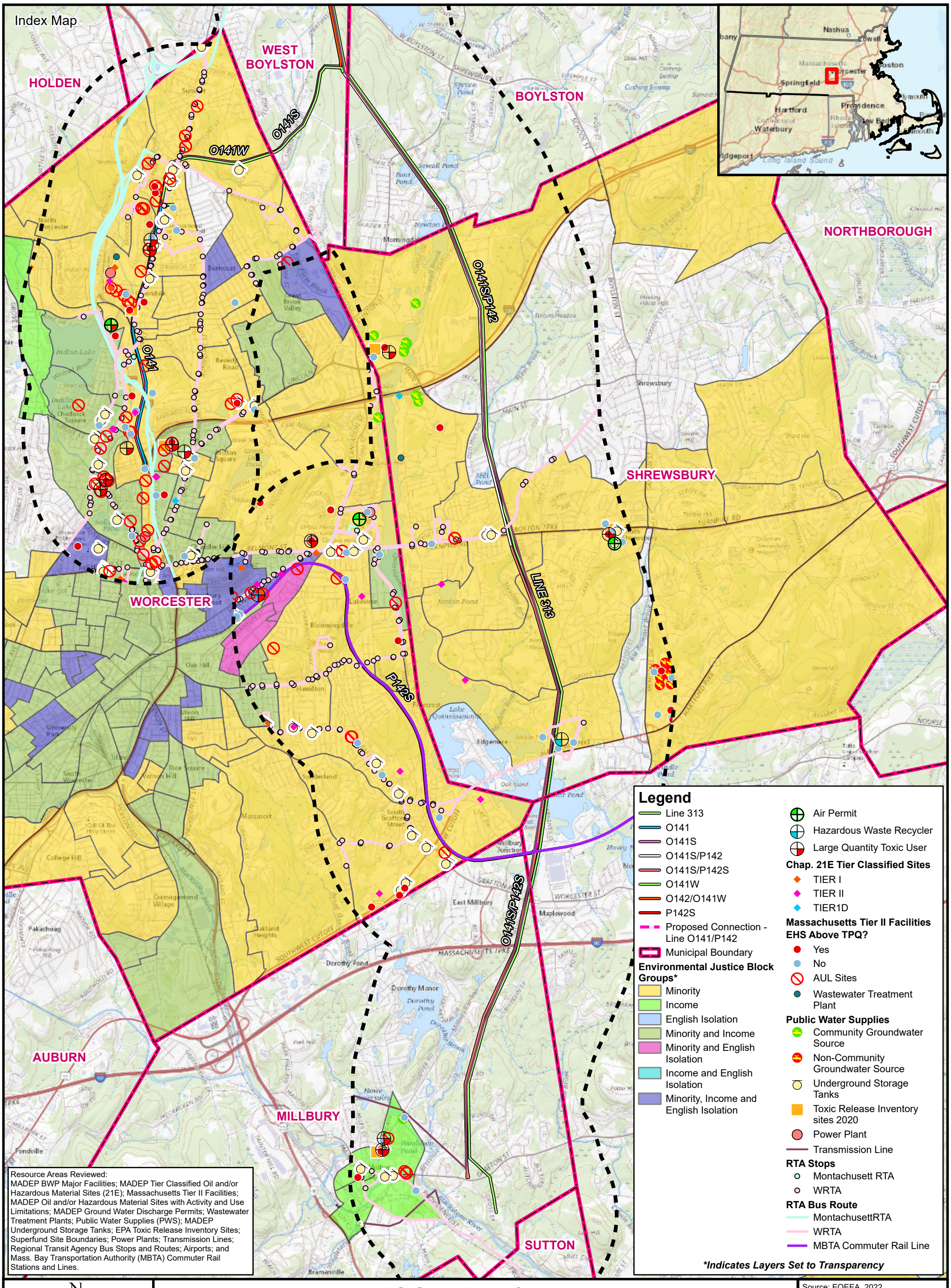
Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Worcester, Shrewsbury, Millbury, MA

Figure 4

Source: EOEEA, 2022

Base Map: World_Street_Map: Esri, HERE, Garmin, NGA, USGS, NPS
USGSTopo: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures

nationalgrid
TRC



N

1:50,400

0 2,100 4,200

Feet

LINES O141/P142 & 313/343
Environmental Justice Areas and Other Pollutant Sources

Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Worcester, Shrewsbury, Millbury, MA

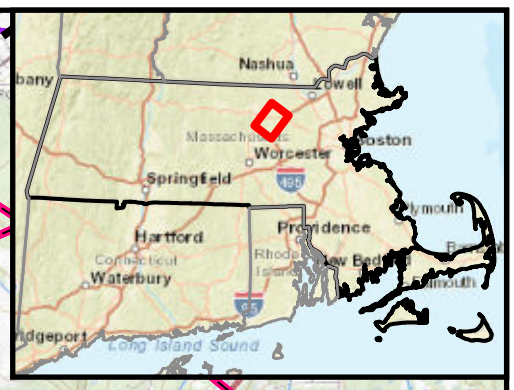
Figure 5
Page 1 of 2

Source: EOEEA, 2022

Base Map: World_Street_Map: Esri, HERE, Garmin, NGA, USGS, NPS USGSTopo: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems;

nationalgrid
TRC

Index Map



GROTON
AYER
SHIRLEY
HARVARD
LUNENBURG
LEOMINSTER
LANCASTER
STERLING
LINE 343

Resource Areas Reviewed:
MADEP BWP Major Facilities; MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); Massachusetts Tier II Facilities; MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; MADEP Ground Water Discharge Permits; Wastewater Treatment Plants; Public Water Supplies (PWS); MADEP Underground Storage Tanks; EPA Toxic Release Inventory Sites; Superfund Site Boundaries; Power Plants; Transmission Lines; Regional Transit Agency Bus Stops and Routes; Airports; and Mass. Bay Transportation Authority (MBTA) Commuter Rail Stations and Lines.

Legend

- Line 343
- P142N/O141N
- Municipal Boundary

Environmental Justice Block Groups*
- Minority
- Income
- English Isolation
- Minority and Income
- Minority and English Isolation
- Income and English Isolation
- Minority, Income and English Isolation

- Large Quantity Toxic User

Chap. 21E Tier Classified Sites
- TIER II
- TIER1D

Massachusetts Tier II Facilities EHS Above TPQ?
- Yes
- No
- AUL Sites

Public Water Supplies
- Community Groundwater Source
- Non-Community Groundwater Source
- Underground Storage Tanks
- Superfund Site Boundary
- Power Plant
- Transmission Line

RTA Stops
- Montachusett RTA

RTA Bus Route
- MontachusettRTA
- Airport
- MBTA Commuter Rail Station
- MBTA Commuter Rail Line

Indicates Layers Set to Transparency

N

1:50,400
0 2,100 4,200
Feet

LINES O141/P142 & 313/343
Environmental Justice Areas and Other Pollutant Sources

Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Worcester, Shrewsbury, Millbury, MA

Figure 5

Source: EOEEA, 2022
Base Map: World_Street_Map: Esri, HERE, Garmin, NGA, USGS, NPS USGSTopo: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems;

nationalgrid
TRC

Appendix B: MEPA Certificate

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Maura T. Healey
GOVERNOR

Kimberley Driscoll
LIEUTENANT GOVERNOR

Rebecca L. Tepper
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1081
http://www.mass.gov/eea

January 29, 2024

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS ON THE EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project
PROJECT MUNICIPALITY	: Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Graton, and Millbury
PROJECT WATERSHED	: Blackstone and Nashua
EEA NUMBER	: 16784
PROJECT PROPONENT	: New England Power Company (d/b/a National Grid)
DATE NOTICED IN MONITOR	: December 22, 2023

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.06 and 11.11 of the MEPA Regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby determine that this project **requires** the submission of an Environmental Impact Report (EIR). In accordance with Section 11.06(8) of the MEPA regulations, the Proponent requested that I allow a Single EIR to be submitted in lieu of the usual two-stage Draft and Final EIR process. I hereby grant the request to file a Single EIR, which the Proponent should submit in accordance with the Scope included in this Certificate.

Project Description

As described in the EENF, the project proposes asset condition and refurbishment (ACR) activities along the New England Power Company ("NEP") 313/343 and O141/P142 Transmission Line right-of-way (ROW), as well as access road improvements and the creation of permanent work pads within the ROW to support the ACR activities and ongoing maintenance of the transmission lines. The ACR work will consist of the replacement of transmission line assets that are in poor condition, and will include pole replacements, upgrades to insulator assemblies and upgrades to grounding. A total of 296 structures on the 313/343 and O141/P142 lines will be replaced in-kind with direct embed foundations or drilled pier foundations. After the replacement structures are installed, the existing structures will be removed, and the lines will be transferred to the new structures. The existing copperweld shield wires on

the 313/343 and O141/P142 lines will be replaced with fiber optic ground wire (OPGW). The construction work pads, which are proposed at the base of each transmission structure, will consist of crushed stone and are proposed to be 125 ft by 100 ft on the 313/343 Line and 100 ft by 100 ft on the O141/P142 Line, where space allows. The proposed work pads also include pull pads that are constructed in between select spans to stage equipment that is used to pull the new OPGW into place. If the area for a proposed work pad has significant topographic changes, then grading is proposed to create a level work area before the crushed stone is added. According to the EENF, the work pads are necessary to accommodate the proposed ACR work and ongoing maintenance of the lines. Where grading of work pads is proposed in sensitive areas and where feasible, the EENF states that NEP will either remove stone so that the size of the permanent work pad will be reduced by 50%, or portions of the work pad will be loamed and seeded for restoration while still allowing for future operation and maintenance accessibility.

As described in the EENF, the access road improvements extend to two tap lines (transmission line extensions off of the main lines with their own ROW) that begin off of the main ROW and terminate at the existing Bloomingdale and Nashua Street Substations in Worcester. The Bloomingdale Tap on the O141/P142 is 3.5 miles, while the Nashua Street Tap is approximately 5 miles. The access road improvements are proposed to address existing erosion and drainage issues, and include two types of improvements. For Type R roads, which are preferred in environmentally sensitive areas (such as rare species habitat), no widening is proposed. Work on these types of roads will involve adding stone, filling in potholes and gullies, and creating drainage features. For Type S roads, which is the standard road type along the majority of the ROW, the EENF indicates that the road will be widened to a maximum of 16 feet via the addition of stone and, for select Type S roads, the road will receive minor grading and scraping. Work on Type S roads will also involve the installation of erosion and stormwater controls through the use of stormwater best management practices (BMPs) and drainage features. The EENF states that the access road improvements will create short- and long-term access to the transmission lines that will enable NEP to inspect, maintain, repair, and otherwise undertake the activities necessary to safely maintain the reliability of the transmission lines. According to the EENF, the project does not propose to add any new access roads, as work will be limited to improvements in the manner described above.

Maintenance mowing and brush cutting are proposed within the ROW along the roadway improvement areas and permanent work pad locations to facilitate access to each structure and provide a safe work area for project personnel. The EENF indicates that very limited tree clearing will be required, though this was not quantified in the EENF and should be clarified in the Single EIR. Access to the ROW for purposes of conducting ACR activities will be primarily through existing access routes held in fee or easement by NEP, though some new access is proposed through “off-ROW” areas as indicated below. As stated in the EENF, following construction, restoration of all temporary work areas is proposed. Debris, or other project waste, will be removed and disposed of. All exposed soils will be temporarily stabilized and seeded as necessary.

Project Corridor

The 1,202.5-acre project corridor extends approximately 35.7 miles along the 313/343 and O141/P142 ROW, from the Sandy Pond Substation to the Millbury #3 Substation, traversing through Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Graton, and Millbury. The EENF states that the ROW includes existing transmission structures and lines for multiple circuits and access roads (including lines not proposed to be improved as part of the project), many of which need to be refurbished or repaired. The 313/343 Lines are located within an existing utility ROW

which begins at Sandy Pond Substation in Ayer and terminates at the Millbury #3 Substation in Millbury. The O141/P142 Lines are located mostly within the same ROW, beginning at Pratt's Junction Substation in Sterling and extending to the Millbury #2 Substation, with two tap lines that terminate at the Bloomingdale and the Nashua Street Substations in Worcester, as noted above. The 313/343 Lines were originally built in 1969, have a transmission capacity of 345 kilovolts (kV), and are supported primarily by a combination of wood and steel pole structures. The O141/P142 Lines were originally constructed in 1929 and later rebuilt in 1989, have a transmission capacity of 115 kV, and are supported primarily by a double circuit tower configuration.

The land use types within the ROW vary widely by location, with some densely developed, urban and suburban areas, and other sections containing more rural agricultural lands and open space, including Article 97 Land[1] (as further described below). The project includes work in *Estimated and Priority Habitat of Rare Species* as delineated by the Natural Heritage and Endangered Species Program (NHESP) in the 15th Edition of the Massachusetts Natural Heritage Atlas, as well as Areas of Critical Environmental Concern (ACECs), Watershed Protection Act (WsPA) Areas, and various wetland resources (further described below). The Massachusetts Department of Conservation and Recreation's (DCR's) Wachusett Reservoir, located within a half-mile of the project corridor, is classified as an Outstanding Resource Water (ORW). The project traverses the Nashua River, classified as a Wild and Scenic River by the National Park Service. The EENF identifies numerous (27) impaired water bodies on or within a half-mile radius of the corridor. The project corridor also contains sites listed in the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth, as further discussed below. Numerous M.G.L. c. 21E sites and two state-listed disposal sites of varying regulated status under the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000), assigned Release Tracking Number (RTNs) 2-0012349 and 2-0000535, are located within the project corridor.

The project corridor crosses 21 Environmental Justice (EJ) populations and is within one mile of 77 total EJ populations characterized by Minority; Income; Minority and Income; Minority and English Isolation; and Minority, Income, and English Isolation criteria. The EENF states that the site is located within five miles of 200 EJ populations. As described below, the EENF included a review of potential impacts and benefits to EJ populations and described public involvement efforts undertaken to date.

Environmental Impacts and Mitigation

According to the EENF, potential environmental impacts associated with the project include the alteration of ±325.9 acres of land, of which 306.2 acres will be permanent (permanent gravel access roads and work pads) and 19.7 acres will be temporary. Potential impacts to wetland resource areas include 19.7 acres of Bordering Vegetated Wetland (BVW), 1.4 acres of Land Under Water (LUW), 3,054 linear feet (lf) of Inland Bank, 24.7 acres of Riverfront Area, and 8.3 acres of Bordering Land Subject to Flooding (BLSF). The project will result in the alteration of 58 acres of designated ACECs, 67.47 acres of Estimated and Priority Habitat, and 25.6 acres of Article 97 Land owned by DCR as well as 22.6 acres of WsPA Areas (some of which overlaps with Article 97 Land). Greenhouse Gas (GHG) emissions and other air pollutants are associated with construction vehicles and tree clearing. Impacts to historical and archaeological areas are possible.

[1] Article 97 refers to Article 97 of the amendments to the state constitution, which require a 2/3 vote of the General Court to authorize any change in use or disposition of land or interest in land that was acquired for the purposes set forth in Article 97, such as park and conservation land.

Measures to avoid, minimize, and mitigate project impacts include use of existing access roads to avoid new land disturbance, where feasible; use of temporary construction mats where crossing wetlands or water courses is unavoidable; spanning of streams to avoid impacts to bank; use of erosion and sedimentation controls and other best management practices (BMPs) during construction; restoration of any disturbed areas to allow for revegetation; restoration of temporarily impacted wetland resources to pre-construction conditions; and protection of identified rare species in consultation with NHESP.

The EENF indicates that the Proponent will conduct investigations for archaeological resources in accordance with a Massachusetts State Archaeologist's permitted plan prior to any site preparation or excavation. The Proponent will use construction and vegetation removal techniques to avoid and minimize impacts within sensitive resource areas, including areas of Priority and Estimated Habitat. As discussed below, the Single EIR should provide more detail on avoidance and minimization measures, and clearly demonstrate that alternatives to minimize total land alteration, particularly for the 306.2 acres of permanent impact due to access roads and work pads, have been thoroughly explored. The Single EIR should provide an expanded alternatives analysis to document the alternatives, explain the reasons for dismissal of alternatives, and update the Preferred Alternative accordingly.

Jurisdiction and Permitting

The project is undergoing MEPA review and is subject to a mandatory EIR pursuant to 301 CMR 11.03(1)(a)(1) and 11.03(3)(a)(1)(a) of the MEPA regulations because it requires Agency Actions and will result in the alteration of 50 or more acres of land and one or more acres of BVW, respectively. The project is also required to prepare an EIR under 301 CMR 11.06(7)(b) of the MEPA regulations because it is located within one mile of one or more EJ populations. Additionally, the project exceeds the Environmental Notification Form (ENF) thresholds at 301 CMR 11.03(3)(b)(1)(b), CMR 11.03(2)(b)(2), 11.03(3)(b)(1)(d), 11.03(3)(b)(1)(f), and 11.03(11)(b), respectively: the alteration of 500 or more linear feet of bank along a fish run or inland bank; Greater than two acres of disturbance of designated priority habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern; alteration of 5,000 or more sf of BVW; alteration of one-half acre or more of any other wetlands; and any project of ½ or more acres within a designated ACEC, unless the Project consists solely of one single family dwelling.

The project requires Orders of Conditions (OOC) from the Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury Conservation Commissions (or in the case of an appeal of any OOC, a Superseding Order of Conditions from the Massachusetts Department of Environmental Protection (MassDEP)); a Section 404 Pre-Construction Notification (PCN) from the U.S. Army Corps of Engineers (USACE); a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) from the U.S. Environmental Protection Agency (EPA); and review by MHC acting as the State Historic Preservation Officer (SHPO) pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (36 CFR 800).

The project requires a 401 Water Quality Certification (WQC) from MassDEP and may require a Conservation and Management Permit (CMP) from NHESP. The project will require a Construction Access Permit (CAP) and potentially a Watershed Protection Act Variance from DCR, as well as Access Permits and Non-municipal Utility Permits for Crossing over State Roads with Utility Lines from the Massachusetts Department of Transportation (MassDOT). While the EENF indicates that no Article 97 legislation is needed, the applicability of Article 97 for permanent improvements on DCR land may need to be explored, as further discussed below.

Because the project is not seeking Financial Assistance from an Agency, MEPA jurisdiction extends to those aspects of the project that are within the subject matter of required or potentially required Permits or within the area subject to a Land Transfer, and that are likely, directly or indirectly, to cause Damage to the Environment.

Request for Single EIR

The MEPA regulations indicate a Single EIR may be allowed provided I find that the EENF:

a) describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope;
b. provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and,
c. demonstrates that the planning and design of the project use all feasible means to avoid potential environmental impacts.

For any Project for which an EIR is required in accordance with 301 CMR 11.06(7)(b), I must also find that the EENF:

d. describes and analyzes all aspects of the Project that may affect EJ Populations located in whole or in part within the Designated Geographic Area around the project; describes measures taken to provide meaningful opportunities for public involvement by EJ Populations prior to filing the EENF, including any changes made to the project to address concerns raised by or on behalf of EJ Populations; and provides a detailed baseline in relation to any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)(1)

Consistent with this request, the EENF was subject to an extended comment period under 301 CMR 11.05(7).

Review of the EENF

The EENF provided a description of existing and proposed conditions, preliminary project plans, photographs of the existing site, and copies of correspondence with DCR, NHESP, and MHC. It identified measures to avoid, minimize and mitigate environmental impacts. Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the EENF contained an output report from the MA Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the "MA Resilience Design Tool"),[2] together with information on climate resilience strategies to be undertaken by the project. It also included a description of measures taken to enhance public involvement by EJ populations and a baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)(1).

Alternatives Analysis

The EENF identifies the project goals as upgrading current transmission lines, creating easier access to individual structures for future maintenance, and addressing some of the drainage and erosion

[2] https://resilientma.org/rmat_home/designstandards/

issues from deteriorating access roads in the ROW. The EENF states that NEP identified and evaluated a variety of potential alternatives for meeting the project need to ensure operational reliability, safety, and electricity supply for the service area based on their ability to meet the identified need and considering reliability, environmental factors, and cost. The alternatives identified and evaluated include: a No-Build Alternative (1); Permit Each ACR Project Separately Alternative (2); Limited Design Alternative (3); and the Preferred Alternative (4).

Alternative 1 (the No-Build Alternative) would not involve any improvements to the access roads, work pads, or transmission infrastructure. It would not result in any new environmental impacts. The No-Build Alternative was dismissed because, according to the EENF, it would affect the reliability of electrical service to customers, does not address existing drainage and erosion issues currently experienced along the project corridor, and does not allow easy access to all of the structures for emergency repair and routine maintenance along the corridor, impacting safety and reliability.

Alternative 2 would involve permitting substantially the same work as the Preferred Alternative, but each ACR project separately (i.e., repairs and improvements to 313/343 Lines and, separately, improvements to the O141/P142 Lines and taps), as opposed to the more comprehensive project proposed herein. It would likely have more impacts than the Preferred Alternative as heavy equipment would be mobilized to the site multiple times. While the total impacts from the structure replacements, transmission line upgrades, and work pads for the ACR work would remain the same, the EENF states that the area of access roads would likely increase as two primary access roads would be upgraded to align each closer to the respective transmission line due to the phased nature of the project. For these reasons, Alternative 2 was dismissed.

Alternative 3 would limit the project design to address only the most essential asset-related issues required to meet electrical safety standards. As described in the EENF, this Alternative would initially result in almost no permanent impacts to the ROW but would require returning repeatedly to complete the less critical line and structure maintenance and improvement activities on the access roads. The EENF indicates that this Alternative was dismissed as it does not address existing drainage and erosion issues along the corridor from deteriorating access roads and does not address the project's need to improve the existing access roads for safe equipment passage, to provide safe work pads for personnel within the ROW, to maintain access for emergency needs, and to complete the ACR work. The EENF notes that, in order to perform the construction of the ACR work, concrete trucks, large cranes, and support vehicles are required to access a majority of the structures, and performing this work on steep slopes and/or significant grade changes is unsafe under a power outage. The EENF further notes that, as portions of the anticipated work may require construction to be performed during live-line events, the need to have a stable, level workspace is paramount. Given these safety needs, this Alternative was not selected.

The EENF indicates that the Preferred Alternative (described herein) was selected as it addresses existing drainage and erosion issues, allows access for emergency repair and maintenance of structures and transmission lines in the corridor, and improves resiliency for adapting to climate change and the increased frequency of storm events. The EENF states that the Preferred Alternative also offers cost efficiencies to customers, reduces disruption to adjacent abutters, and minimizes regulatory burden, and further that while the Preferred Alternative requires more work and disturbance initially (as compared to Alternative 3), it creates less disturbance in the future. The EENF states that there are no feasible alternative access routes that would have less impact to resource areas than using roads within the existing ROW and the few off-ROW access routes that help avoid resource impacts.

As discussed above, the EENF proposes up to 306.2 acres of permanent land alteration associated with widened access roads and permanent new work pads around the refurbished transmission structures. The EENF does not describe the process by which the dimensions of work pads or access roads were determined, other than to state that widening of roads is generally avoided in sensitive areas. The EENF does not indicate why these particular lines were chosen for refurbishment, including whether specific instances of power outages or reliability issues led to the project and whether this ACR project is part of a master plan developed by NEP for this region or the state. These issues should be discussed in a supplemental alternatives analysis prepared in accordance with the Scope.

Environmental Justice

As noted above, the project corridor crosses 21 EJ populations and is within one mile of 77 total EJ populations characterized by Minority; Income; Minority and Income; Minority and English Isolation; and Minority, Income, and English Isolation criteria. Within the census tracts containing the above EJ populations within 1 mile of the project site, the following languages are identified as those spoken by 5% or more of residents who also identify as not speaking English very well (Limited English Proficiency (LEP) individuals): Spanish, Portuguese, Cape Verdean, and Chinese. The EENF indicates that the DGA for the project is 1 mile.

Effective January 1, 2022, all new projects in "Designated Geographic Areas" ("DGA," as defined in 301 CMR 11.02, as amended) around EJ populations are subject to new requirements imposed by Chapter 8 of the Acts of 2021: An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy (the "Climate Roadmap Map") and amended MEPA regulations at 301 CMR 11.00. Two related MEPA protocols—the MEPA Public Involvement Protocol for Environmental Justice Populations (the "MEPA EJ Public Involvement Protocol") and MEPA Interim Protocol for Analysis of project Impacts on Environmental Justice Populations (the "MEPA Interim Protocol for Analysis of EJ Impacts")—are also in effect for new projects filed on or after January 1, 2022. Under the new regulations and protocols, all projects located in a DGA around one or more EJ populations must take steps to enhance public involvement opportunities for EJ populations, and must submit analysis of impacts to such EJ populations in the form of an EIR.

The EENF describes public involvement activities conducted prior to filing, including advance notification of the project circulated to a list of community-based organizations (CBOs) and tribes/indigenous organizations (the "EJ Reference List") provided by the MEPA Office. Information circulated by the Proponent included the EJ Screening Form which identified ways to request additional information or a community meeting. NEP created a public website for the project, available in English, Spanish, Brazilian Portuguese, Cape Verdean, and Chinese, which provides details of the project and contact information for review. The website contains a toll-free number and email address which are directed to the outreach team at NEP for follow up. The EJ screening form included a link to a public project website (www.centralmassreliability.com), and was translated into the above languages. Additionally, NEP hosted a virtual informational meeting on March 23, 2023. The EENF states that, to date, no comments or questions have been received from the public on the project. An evening remote consultation session and an in-person site visits at six locations were held during MEPA review to promote public involvement. Additionally, oral interpretation services were offered in Spanish, Brazilian Portuguese, Cape Verdean, and Chinese upon request, although these services were not utilized by anyone who attended the meetings.

The EENF contains a baseline assessment of existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ populations in accordance with 301 CMR

11.07(6)(n)1 and the MEPA Interim Protocol for Analysis of EJ Impacts. The EENF indicates that "vulnerable health EJ criteria" for municipalities located within one mile of the project area were identified using the Massachusetts Department of Public Health (DPH) EJ Tool; this term is defined in the DPH EJ Tool to include any one of four environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling average.[3] Within the project's DGA, the Proponent indicates that the communities of Ayer, Shirley, Worcester, and Leominster meet at least one of the four "vulnerable heath EJ criteria"; however, the EENF does not identify which census tracts exceed 110% of the statewide rate for Low Birth Weight and Childhood Blood Lead Prevalence. In addition, the EENF indicates that the following sources of potential pollution exist within the identified EJ populations, based on the mapping layers available in the DPH EJ Tool:

- Major air and waste facilities: 4
- M.G.L. c. 21E sites: 50
- "Tier II" Toxics Release Inventory Site: 141
- MassDEP sites with AULs: 96
- MassDEP groundwater discharge permits: 1
- Wastewater treatment plants: 5
- MassDEP public water suppliers: 51
- Underground storage tanks: 79
- EPA facilities: 34
- MBTA bus and rapid transit: 40
- Other transportation infrastructure: 1
- Regional transit agencies: 2
- Energy generation and supply: 43

The EPA EJ Screening tool was also surveyed to determine whether any of the EJ populations within the DGA are subject to environmental burdens as measured at the 80th percentile of statewide averages or higher. The following number of block groups in each municipality were measured at the 80th percentile or higher for the respective environmental indicators:

- *Superfund Proximity:*
  - Ayer: four census block groups (82nd – 88th percentile)
  - Shirley: two census block groups (82nd –84th percentile)
- *Wastewater Discharge:*
  - Ayer: four census block groups (86th – 99th percentile)
  - Shirley: three census block groups (81st – 95th percentile)
  - Worcester: one census block groups (90th percentile)
  - Shrewsbury: six census block groups (84th – 95th percentile)
  - Grafton: three census block groups (94th – 98th percentile)
  - Millbury: four census block groups (82nd – 88th percentile)
- *Lead Paint*
  - Shirley: one census block groups (84th percentile)
  - Worcester: five census block groups (80th – 96th percentile)
- *Traffic Proximity*
  - Worcester: five census block groups (89th – 96th percentile)

[3] See https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html. Four vulnerable health EJ criteria are tracked in the DPH EJ Viewer.

- *RMP Proximity:*
    - Grafton: two census block groups (80th – 91st percentile)

While the EENF concludes that there is some indication of an existing "unfair or inequitable" burden in certain EJ populations within the DGA, it asserts that the project will not result in disproportionate adverse effects, or increase the risks of climate change, on the EJ populations by materially exacerbating such existing burdens. In particular, the EENF asserts that impacts will be limited to the construction period, and measures will be employed to mitigate these impacts, including potential noise, traffic, and water quality impacts. According to the EENF, the project will improve the overall reliability of the power transmission system which both EJ and non-EJ communities rely on, and by improving access throughout the ROW, NEP will be able to respond to future maintenance and emergency needs safely. The project will also improve the transmission system's resiliency to climate change impacts. The EENF states that impacts will be limited to the existing ROW, minimizing potential adverse environmental impacts to the surrounding areas, and concludes that the project will not materially exacerbate any existing unfair or inequitable environmental or public health burden impacting the EJ populations. As discussed below, the project proposes 306.2 acres of land alteration in various resource areas, including rare species habitat, DCR watershed protection and recreational (state forest) areas, and ACECs. As these resource areas provide open space, recreational and general public health benefits for the public, the Single EIR should document ways in which the project has taken steps to avoid or minimize impacts to those areas.

Land Alteration

The EENF indicates that the land area within the project ROW (the project corridor) is approximately 1,202.5 acres, within which work is proposed on approximately 325.9 acres of land (306.2 acres permanent and 19.7 acres temporary). The EENF contains a breakdown of land use types within the project area, which includes residential, commercial, industrial, agricultural, mixed-use, open space, transportation, and recreation land uses. The EENF states that the project has been designed to minimize impacts to the land within and adjacent to the ROW, and further states that the project does not require any expansion of the existing ROW and only requires very limited tree-clearing along the Bloomingdale Tap to provide access along an existing railroad line, and for proposed pull pad locations. Proposed road upgrades will occur along existing access roads or cart paths, which limits the need to clear and grade new areas within the ROW. Off-ROW access routes are used in locations where NEP has existing rights when they provide more feasible routes that avoid environmental resources or areas that would require grading; however, these access routes are not proposed to be improved as part of the project.[4] The EENF states that the proposed access road upgrades have been designed to be the minimum width needed to safely allow vehicle access, and that permanent work pads will only be graded where necessary to allow for a safe and level work area. Once the roads and permanent work pads have been constructed, adjacent side slopes and roadside shoulders will be seeded if necessary and allowed to revegetate. Additional restoration efforts will be made to mitigate impact caused from the work pads, such as reducing the total work pad size by 50% after construction is complete, or loaming and seeding portions of the work pad so vegetation is restored. The EENF states that NEP is currently working to determine ways to reduce impacts specifically to environmentally sensitive areas. As noted above, more detail about minimization measures for land impacts should be provided in the Single EIR.

[4] As stated in an email sent from Erin Cahill (National Grid) to Eva Vaughan (MEPA Office) on January 26, 2024.

Article 97

The EENF identifies permanently protected Article 97 Lands that intersect the project ROW, which includes state lands, town parks, and private lands with conservation restrictions that provide recreation, conservation, and habitat protection. The EENF indicates that the project will permanently impact 25.6 acres of DCR-owned land, some of which includes protected parcels around the Wachusett Reservoir, which are discussed further below. The EENF states that the project work will be limited to NEP's fee-owned land or easements and no disposition of land subject to Article 97 is anticipated. However, the EENF notes that written approval from DCR or approval through a CAP issued by DCR may be required when significant improvements are made to existing access roads within DCR land. The Single EIR should clarify the applicability of Article 97 requirements and whether recorded easements cover all access routes, roads, and work pads proposed in DCR land, and, if not, whether new easements may be needed to allow for long-term maintenance of utility lines.

Areas of Critical Environmental Concern (ACECs)

The project includes work in the Squannassit, Petapawag, and Central Nashua River Valley ACECs. The EENF indicates that the project will involve the permanent alteration of 54.7 acres of ACECs, and 3.3 acres of temporary alteration to ACECs. Of the 54.7 acres of permanent impacts, 16.2 acres are located within the Squannassit ACEC, 22.1 acres in the Petapawag ACEC, and 16.5 acres in the Central Nashua River Valley ACEC. The EENF states that BMPs will be implemented to minimize any potential impacts to regulated resources within the ACECs, such as the use of straw wattles, silt fencing, stormwater management features, and other control measures, to prevent soil and other material from being transported into wetlands and streams within the ACECs during construction. The project will also prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). The EENF states that additional measures will be taken to reduce impacts to land use within ACECs, and that the Proponent will consult with the ACEC program to solicit staff input on possible land alteration reductions.

Wetlands and Waterways

The EENF indicates that water resources were delineated between 2020 and 2023, including 225 wetlands and 85 streams in the project corridor, and 38 Certified Vernal Pools (CVPs) within a half-mile of the ROW. According to the EENF, the project is proposed to result in the temporary alteration of 19.7 acres of BVW, 1.4 acres of LUW, 4.6 acres of Riverfront Area, approximately 3,054 lf of Inland Bank, and 3.6 acres of BLSF. The project will permanently impact an additional 20.1 acres of Riverfront Area and 4.7 acres of BLSF. The EENF reviews the performance standards for each wetland resource area. The Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury Conservation Commissions will review the project for its consistency with the Limited Project provisions of the Wetlands Protections Act (WPA), the Wetland Regulations (310 CMR 10.00), and associated performance standards. MassDEP will review the project for its consistency with the 401 WQC regulations (314 CMR 9.00).

The project will result in temporary impact to BVW, LUW, and Bank due to the placement of construction matting to create work pads, pull pads and access roads. There are no permanent access roads proposed through wetlands; instead, NEP proposes construction mats in wetland areas to minimize wetland disturbance and compaction of soils. The construction mats will be installed to allow access for heavier equipment and vehicles to support the road building and line work and are considered a BMP to

reduce wetland impacts by avoiding soil compaction. Construction mats will be removed from all resource areas once construction is completed, and disturbed areas will be restored.

The project will result in permanent impacts to Riverfront Area, BLSF, and Buffer Zone from the construction of work pads, pull pads and road access upgrades. As described in the EENF, roadway improvements are proposed in previously developed Riverfront Area and BLSF, where there are existing access roads and/or cart paths, minimizing new impacts to these resource areas. Work pads in BLSF and Riverfront Area will be reduced by 50% once work is completed, or they will be loamed and seeded to help restore vegetation in order to reduce permanent impacts to these areas. Compensatory flood storage will be provided should a permanent work pad in BLSF require grading that would lead to a significant loss of flood storage. Further details regarding wetlands impacts and mitigation should be provided in the Single EIR in accordance with the Scope below.

As described in the EENF, the ROW traverses several navigable rivers and great ponds (Pout Pond, Flint's Pond, and Lake Quinsigamond) that are subject to Chapter 91 (c.91). The EENF identifies existing c.91 Licenses for the O141/P142 and 313/343 Lines. As stated in the EENF, while the need for c.91 licensing and/or permitting is still being evaluated, based on the current scope of work (which does not include lowering of any existing transmission lines or change in transmission line alignment over a jurisdictional waterbody), c.91 approval is not anticipated to be required. Comments from the MassDEP Waterways Regulations Program (MassDEP-WRP) state that the ACR work may qualify for maintenance under 310 CMR 9.22(1), as noted in the EENF; however, there are several locations in the project site where temporary construction mats span a stream in order to perform the line refurbishment work. Additional information regarding impacts to waterways and waterbodies should be included in the Single EIR, as directed by the Scope below.

Drinking Water

The EENF indicates that the project will involve 20.0 acres of permanent alteration and 2.6 acres of temporary alteration to WsPA Areas associated with DCR's Wachusett Reservoir, a public drinking water supply. As described in the EENF, the aim of the WsPA is to regulate land uses within the watersheds of drinking water supplies to protect the quality of the water that is treated and distributed by the Massachusetts Water Resources Authority (MWRA). In accordance with WsPA regulations at 313 CMR 11.09, NEP will have to employ construction BMPs to prevent erosion leading to a degradation of water quality, including the use of erosion controls at the limits of disturbance and installing construction mats in wetlands within the Wachusett Reservoir watershed on top of geotextile fabric to prevent sediment from falling between the gaps in the mats and into the resource area. No direct work within streams or waterbodies within the Wachusett Reservoir watershed is proposed. NEP will file a Request for Advisory Opinion with DCR and consult with DCR to determine what additional measures may be needed to minimize the chance of any sediment from construction activities from reaching the Wachusett Reservoir. Comments from DCR state that the project may meet the criteria for an exemption as stated in 313 CMR 11.05(11) for "Maintenance of Public Utilities."

Rare Species

As noted above, portions of the project area are mapped as *Priority and Estimated Habitat* for seven state-listed species, including one plant, two birds, two reptiles, and two invertebrates. Specific species are not identified in the EENF at NHESP's request. These species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (MESA; 321 CMR 10.00). The EENF indicates that the project will permanently alter 62.4

acres of Priority and Estimated Habitat, and temporarily alter 5.07 acres. To generally avoid and minimize species and habitat impacts to the maximum extent feasible, the project will use NHESP-approved, species-specific measures to reduce impacts in accordance with the NHESP Operations & Maintenance (O&M) Plan issued to National Grid (NHESP File No. 22-40898). The EENF states that NEP will continue to consult with NHESP on appropriate BMPs and mitigation measures; however, at a minimum, NEP will conduct turtle trainings with field crews, delineate rare plant locations for avoidance, utilize erosion controls to avoid any sedimentation in rivers, survey for host plants, and avoid work during sensitive dates to the best extent possible, in addition to following the NHESP O&M guideline. Comments from NHESP state that, based on the information currently available and in advance of a formal filing pursuant to the MESA, NHESP cannot determine whether the project as proposed can be sufficiently conditioned to avoid a prohibited Take (321 CMR 10.18(2)(b)) of state-listed species habitats. Should the project result in a Take of state-listed species, then the project may only be permitted if it meets the performance standards for a Conservation and Management Permit (CMP; 321 CMR 10.23).

Traffic and Transportation

Although there will be a temporary increase in traffic from construction vehicles while construction is underway, the EENF states that there will be no permanent increase in traffic as a result of the project. NEP will coordinate with MassDOT to develop traffic management plans (TMPs) for any work within or over state highways. TMPs will be developed and submitted for review and approval from MassDOT prior to the start of construction. The TMPs may include strategies such as following traffic management procedures, construction time restrictions, signage, and installing traffic pads to minimize soils in roadways. Comments from MassDOT confirm that Access Permits and Non-municipal Utility Permits for Crossing over State Roads with Utility Lines will be required for the project. MassDOT does not expect the project to significantly impact the transportation system once construction is complete, and recommends no further review of transportation impacts.

Historic and Archaeological Resources

The project is subject to review under Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800) and M.G.L. c. 9, ss. 26-27C (950 CMR 71.00). As described in the EENF, a cultural resources due diligence review was completed in October 2019 which identified the need to perform a subsequent intensive (locational) archaeological survey. A consultant for the Proponent submitted a State Archaeologist's Permit application to the MHC in May 2022 for the 313/343 ROW, in August 2022 for the O141/P142 ROW, and an amended application in August 2023 to survey the access road upgrades; MHC issued permits to conduct these surveys in July 2022, August 2022, and August 2023 respectively. PAL plans to perform any necessary limited archaeological mitigation investigations of archaeological sites that are potentially eligible for listing in the National Register of Historic Places in 2024 when ground conditions are suitable for field investigations. PAL plans to file a survey report and a draft archaeological site avoidance and protection plan (SAPP) with the MHC and other consulting parties in the first half of 2024. The EENF states that NEP will continue to consult with the MHC, DCR, and Native American Tribes throughout the permitting process to avoid minimize or mitigate adverse effects to historic and archaeological resources that may be affected by the project.

Climate Change

Adaptation and Resiliency

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. The EENF contained several output reports generated for different sections of the project corridor. In all reports, the transmission line was assessed as having a "High" risk rating for extreme precipitation (urban and riverine flooding) and extreme heat. The project's overall exposure rating varies between the sections evaluated. Based on the 50-year useful life identified and the self-assessed criticality of the project asset, the Tool recommends a planning horizon of 2070 and a return period associated with a 50-year (2% chance) storm event when designing the project (a "utilities" asset) for the extreme precipitation parameter. The EENF does not identify whether any portion of the project is located within the 100-year floodplain, nor does it identify the project's compliance with the Tool's recommendations; this information should be provided in the Single EIR.

The EENF states that the ACR work will make the transmission infrastructure and access roads more resilient to strong winds and storm events associated with climate change. Crews will be able to access structures during emergencies more easily and more safely once the proposed improvements (including access road improvements and the construction of work pads) are made. The EENF describes how the proposed project complies with local climate resilient adaption strategies which identify aging infrastructure as a vulnerability and indicate the need (in community Master Plans) for improved reliability of electrical service to support economic growth and housing. As stated in the EENF, there will be no significant tree clearing as a result of the project and as such, the project is not expected to contribute to extreme heat in the area. I note that the project will involve the conversion of currently vegetated areas to gravel work pads. The EENF states that access road improvements withing BLSF will have negligible impact on compensatory flood storage as stone will be placed at existing grade. Permanent work pads in BLSF will only be used where there is no alternative, and compensatory flood storage will be provided where permanent fill is proposed, as noted above.

Greenhouse Gas Emissions

This project is subject to review under the May 2010 MEPA Greenhouse Gas Emission (GHG) Policy and Protocol (Policy) because it exceeds thresholds for a mandatory EIR. The GHG Policy includes a de minimis exemption for projects that are expected to produce minimal GHG emissions. The EENF indicates that GHG emissions associated with the project will be limited to the construction period and are de minimis. The Proponent therefore was not required to submit a GHG analysis in conjunction with the EENF.

Construction Period and Hazardous Waste

According to the EENF, there are 50 21E listed sites and 96 Activity Use Limitations (AULs) within one mile of the project corridor. The EENF states there is only one AUL that intersects the ROW, and that NEP has retained the services of a Licensed Site Professional (LSP) to ensure that the project is consistent with the conditions outlined in the AUL. Comments from MassDEP note that excavating, removing and/or disposing of contaminated soil, pumping of contaminated groundwater, or working in contaminated media must be done under the provisions of MGL c.21E (and, potentially, c.21C) and OSHA and may require the submittal of a Release Abatement Plan, or to be conducted as a Phase IV Remedial Action. Excavating contaminated soil or pumping contaminated groundwater could be

considered response actions under the MCP. Particular attention should be made at the Sandy Pond Substation (RTN 2-0016886) where a release of mineral oil dielectric fluid to soil and groundwater occurred.

All construction activities should be managed in accordance with applicable MassDEP's regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11). I encourage the Proponent to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). If oil and/or hazardous materials are found during construction, the Proponent should notify MassDEP in accordance with the Massachusetts Contingency Plan (310 CMR 40.00). All construction activities should be undertaken in compliance with the conditions of all State and local permits.

SCOPE

General

The Single EIR should follow Section 11.07 of the MEPA regulations for outline and content and provide the information and analyses required in this Scope. It should clearly demonstrate that the Proponent has sought to avoid, minimize and mitigate Damage to the Environment to the maximum extent practicable.

Project Description and Permitting

The Single EIR should identify any changes to the project since the filing of the EENF. It should identify and describe State, federal, and local permitting and review requirements associated with the project and provide an update on the status of each of these pending actions. The Single EIR should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project's consistency with those standards.

The Single EIR should include detailed site plans for existing and post-development conditions at a legible scale. Plans should clearly identify buildings, interior and exterior public areas, impervious areas, transportation improvements, and stormwater and utility infrastructure. The Single EIR should provide detailed plans, sections, and elevations to accurately depict existing and proposed conditions, including proposed above- and below-ground structures, on- and-off-site open space, and resiliency and other mitigation measures.

The Single EIR should provide additional information regarding the proposed ACR activities. Specifically, the Single EIR should confirm the number of structures to replaced, clarify the number of structures (poles) that will be replaced with direct embed foundations as opposed to drilled pier foundations, and clarify whether any existing structures will be removed/new structures are proposed to be installed. It should identify the total length and area of access road improvements (distinguishing between Type S and R roads). It should update quantified temporary and permanent environmental

impacts (including to specific resource types) to the extent these impacts have changed since the filing of the EENF.

The information and analyses identified in this Scope should be addressed within the main body of the Single EIR and not in appendices. In general, appendices should be used only to provide raw data, such as drainage calculations, traffic counts, capacity analyses and energy modelling, that is otherwise adequately summarized with text, tables and figures within the main body of the Single EIR. Information provided in appendices should be indexed with page numbers and separated by tabs, or, if provided in electronic format, include links to individual sections. Any references in the Single EIR to materials provided in an appendix should include specific page numbers to facilitate review.

Alternatives Analysis

As discussed above, the EENF proposes up to 306.2 acres of permanent land alteration associated with widened access roads and permanent new work pads around the refurbished transmission structures. The Single EIR should describe the process by which the dimensions of work pads or access roads were determined. It should address why these particular lines were chosen for refurbishment, including whether specific instances of power outages or reliability issues led to the project and whether this ACR project is part of a master plan developed by NEP for this region or the state. It should demonstrate that the Preferred Alternative reduces environmental impacts to the maximum extent feasible.

Environmental Justice

The Single EIR should include a separate section on "Environmental Justice" that describes a public involvement plan to meaningfully engage EJ populations located within the DGA in decision-making for the project. It should identify the criterion associated with the designation of the 21 EJ populations that cross the project corridor. The Single EIR should contain a full description of measures the Proponent intends to undertake to promote public involvement by such EJ populations during the remainder of the MEPA review process including a discussion of any of the best practices listed in the MEPA EJ Public Involvement Protocol that will be employed. It should describe any outreach that will be conducted as part of local review processes. The Single EIR should include an update on any outreach conducted since the filing of the EENF and a description of any changes made to the project (including mitigation measures) in response to this outreach. The Single EIR, or a summary thereof, should be distributed to the "EJ Reference List," with any updates to the list provided by the MEPA Office upon request.

As discussed below, the Single EIR should update analysis with regard to minimization measures relative to rare species habitat, DCR land/state forests, watershed land, and ACECs where recreational and drinking water sources available to the public may be implicated. The Single EIR should further describe stormwater controls, and discuss whether any flooding risks may be anticipated to surrounding areas. The Single EIR should describe whether significant vegetation removal will occur near EJ neighborhoods, and whether this may exacerbate extreme heat risks under future climate conditions.

Public Health

The Single EIR should include a separate section on "Public Health," and discuss any known or reasonably foreseeable public health consequences that may result from the environmental impacts of the project. Particular focus should be given to any impacts that may materially exacerbate "vulnerable

health EJ criteria," in accordance with the MEPA Interim Protocol for Analysis of EJ Impacts. In addition, other publicly available data, including through the DPH EJ Tool, should be surveyed to assess the public health conditions in the immediate vicinity of the project site, in accordance with 301 CMR 11.07(6)(g)10. Any project impacts that could materially exacerbate such conditions should be analyzed. The Single EIR should provide additional analysis of impacts on EJ populations consistent with the MEPA Interim Protocol including fully analyzing the data available in the DPH tool at the municipal and census tract level. The Single EIR should provide the number and type of pollution source broken down by municipality in which the EJ populations are located. To the extent any required Permits for the project contain performance standards intended to protect public health, the Single EIR should contain specific discussion of such standards and how the project intends to meet or exceed them. The Single EIR should provide additional information regarding measures to mitigate any potential impacts to EJ populations during the construction period. Specifically, the Single EIR should provide more detail regarding construction period activities, including the estimated number of construction period truck trips that are anticipated for the project, and the potential for increased emissions within EJ populations near and within the ROW.

Land Alteration and Stormwater

The Single EIR should provide an update of total of land alteration, distinguishing between temporary and permanent impacts, and clarify the amount of tree clearing required. It should clarify the other land cover types (scrub shrub, grassland, etc) associated with other types of land alteration, and quantify the acreage of each land cover type. It should clarify the area of alteration associated with widening along Type S roads, and identify the typical width of existing access roads to be widened. The Single EIR should identify the acreage of alteration that will occur outside of the ROW and/or easements currently held by the NEP and, if such alteration is proposed, evaluate measures to minimize this impact to the maximum extent feasible. As noted above, the Single EIR should supplement the Alternatives Analysis to further explain how the size of work pads and access roads was determined, and to explain what alternatives were explored to minimize land and resource area impacts. The Single EIR should identify the minimum area of work pads necessary to facilitate ongoing maintenance as opposed to project construction, and identify the total area of work pads prior to/during construction and following restoration activities. It should clearly show the area and location of work pads on site plans, as well as the areas to be restored following project construction. The Single EIR should demonstrate that the size of work pads has been minimized to the maximum extent possible, particularly in environmentally sensitive areas (NHESP habitat, ACECs, Article 97 Land, wetland resource areas, etc.). The Proponent should confirm whether new access roads and work pads shown within existing active agricultural areas on the access plans will be permanent or temporary, as requested by MassDEP.

The Single EIR should clarify whether access through DCR land is proposed only in areas with recorded easements or fee ownership (or whether new access points outside easement areas, such as in off-ROW areas, are proposed). The Single EIR should clarify the total extent of "off-ROW" access proposed by the project, whether these are proposed in resource areas or DCR land, and what impacts and mitigation are provided for such access.

The EENF states that the project has been designed to comply with the Massachusetts Stormwater Management Standards (SMS) to the maximum extent possible as a limited and redevelopment project. The Single EIR should demonstrate that all redeveloped area meets the SMS to the maximum extent practicable following the criteria in Volume 2, Chapter 3 of the Massachusetts Stormwater Handbook, as requested by MassDEP. Comments from MassDEP note that although work pads, new sections of access road, and widening of access roads will not result in significant forest

clearing, many acres of shrub/herbaceous vegetation will be permanently converted to gravel, potentially resulting in an increase in the temperature of surface water runoff, reduction in wildlife habitat, and a decrease in carbon sequestration. The Single EIR should identify the total existing and proposed gravel areas, including access roads and work pads.

Article 97

The Proponent should consult with DCR prior to filing the Single EIR to confirm that the project will not involve the disposition of Article 97 Land, as asserted in the EENF. The Single EIR should quantify the amount of permanent and temporary alteration to DCR land. It should identify the total area and location(s) where significant improvements will be made to existing access roads within DCR land. A description of the existing and proposed conditions in these areas should be provided. As noted above, the Single EIR should clarify the applicability of Article 97 to areas where substantial improvements to access roads are proposed within DCR land (such that a "change in use" could result), or where new access is proposed in areas without recorded easements within DCR land holdings. If Article 97 legislation is required, the Single EIR should provide an alternatives analysis consistent with that required to comply with the new Public Lands Preservation Act (PLPA).[5]

ACEC

The Proponent is expected to consult with DCR's ACEC program regarding the project's compliance with the intent of the ACEC designations and measures to reduce impacts to ACECs. The Single EIR should provide an update on this consultation and identify any changes made in response. The Single EIR should identify the permanent and temporary impacts to each ACEC within the project corridor, and identify what these impacts are associated with. The Single EIR should evaluate measures to reduce impacts to ACECs, and identify any reductions made since the EENF. The EENF does not discuss the project's compliance with the intent of each ACEC designation; this information should be provided in the Single EIR.[6]

Wetlands and Waterways

The Single EIR should provide updated estimates of permanent and temporary impacts to wetland resource area as appropriate, and clarify what activities these impacts are associated with. It should clarify impacts to existing vegetated and non-vegetated resource areas, and clarify the amount of cut and fill proposed within BLSF, as well as proposed compensatory flood storage. I refer the Proponent to comments from MassDEP, which note that work pads, new access roads, and expanded road widths should be considered new degraded areas. The Single EIR should identify the new creation of degraded areas within each resource area. The Single EIR should evaluate offsite mitigation and/or restoration of onsite degraded areas to compensate for conversion of vegetated areas to degraded areas, as requested in comments from MassDEP. Coldwater Fisheries should be delineated and shown on the Access Plans, and the Single EIR should include an evaluation of potential impacts to Coldwater Fisheries and other Critical Areas.

The Single EIR should verify whether a 401 Water Quality Variance will be required in addition to the 401 WQC for work resulting in the discharge of dredged or fill material into wetlands within Outstanding Resources Waters ("ORWs") (314 CMR 9.06(3)) within the Wachusett Reservoir

[5] https://www.mass.gov/info-details/article-97-the-public-lands-preservation-act
[6] ACEC designation documents can be found here: https://www.mass.gov/lists/acec-designations

watershed in Boylston, West Boylston, and Sterling, or within 400 feet of the Wachusett Reservoir, a Class A surface water (314 CMR 9.06(4)), as requested in comments from MassDEP. MassDEP notes that, as tributaries to the Wachusett Reservoir, all wetlands within the easement between the Boylston/West Boylston town line and Kendall Hill Road in Sterling are ORWs. The Single EIR should update the permanent and temporary alteration to ORW as necessary.

The Single EIR should identify if any access roadways are proposed within new locations and whether any existing access roadways will be abandoned or restored to vegetated conditions; discuss if the upgraded access roads will result in increased use of the easement by unauthorized off-road vehicles, leading to additional damage to wetland resource areas and buffer zones; and describe long-term maintenance requirements for the work pads. To the extent they are available, the Single EIR should include Wildlife Habitat Evaluations for impacts to Bank, BVW, LUW, BLSF, and Riverfront Area. If culvert replacements or extensions are required due to the widening of access roads, the Single EIR should demonstrate that the crossings meet the Massachusetts Stream Crossing Standards to the maximum extent practicable according to the criteria found in 310 CMR 10.53(8), as noted in comments from MassDEP.

Comments from MassDEP note that the Draft Section 61 Findings included in the EENF only commit to mitigation measures already required to achieve compliance with WPA and WQC regulations. The Proponent is expected to expand upon the proposed mitigation measures to include mitigation for the large areas of vegetation and soil that will be replaced with gravel throughout the project, and specifically within BLSF, Riverfront Area, and Buffer Zones, as requested in comments from MassDEP. As noted above, the Proponent should evaluate minimizing permanent impacts to these areas through the reduction in width of access roads/area of permanent work pads to the maximum extent feasible.

The Single EIR should address comments from MassDEP-WRP regarding potential c.91 impacts. Specifically, the Single EIR should include detailed plans that include the High Water Mark, which is the c.91 jurisdictional boundary for the navigable portions of non-tidal rivers and streams. The Proponent is also encouraged to consult with MassDEP-WRP for a full review of the scope of work as it relates to c.91 licensing. An update on any such consultation should be provided in the Single EIR. The Single EIR should identify whether any Minor Modification to existing c.91 Licenses/Permits will be required for the project.

Drinking Water

The Proponent is expected to consult with DCR regarding the request for a Temporary Access Permit from the DCR Wachusett Reservoir Regional Office. An update on this coordination should be provided in the Single EIR. The Proponent should evaluate measure to further reduce permanent impacts to WsPA Areas. The Proponent should explore options to block certain access areas from use by All-Terrain Vehicles and motorized dirt bikes, as requested by DCR.

Rare Species

The EENF indicates that NEP will continue to consult with NHESP, and that a Massachusetts MESA checklist is being prepared and will be implemented to avoid, minimize, and mitigate project-related impacts in accordance with the O&M Plan. The Single EIR should provide an update on consultation with NHESP, and address whether a determination has been made as to whether the project will involve a "Take" and in turn a CMP. The Single EIR should include a draft MESA checklist to the

extent it is available. It should update the calculations of impacts to Priority and Estimated Habitat (separately) and distinguish between temporary and permanent impacts to these resources. It should continue to evaluate measures to reduce impacts to rare species habitat.

Historic and Archaeological Resources

The EENF indicates that the Proponent will file a survey report with the MHC in the first half of 2024 and will be developing measures to minimize or mitigate adverse effects to historic and archaeological resources. The details and results of this survey should be provided in the Single EIR to the extent they are available. The Single EIR should provide an update on coordination with MHC.

Climate Change

The Single EIR should identify the areas of the project corridor that are located within a 100-year floodplain, the applicable FEMA Zone, base flood elevations (BFEs), and the proposed permanent and temporary work in these areas. While the EENF describes the general resiliency benefits of the project achieved by updating aging infrastructure to current design standards, it does not specifically address the design recommendations from the MA Resilience Design Tool. The Single EIR should identify the specific portions of the project corridor flagged as having "Moderate" to "High" to (future) riverine flooding as indicated by the MA Resilience Design Tool in the revised output report. It should include a narrative explaining whether proposed infrastructure improvements will make the project assets more resilient to risks associated with riverine flooding from a 50-year (2%) storm event estimated as of 2070. The Single EIR should discuss the extent to which existing electrical lines are exposed to riverine flooding, and what measures the Proponent is taking to improve asset resiliency over a longer-term horizon. In particular, the Single EIR should discuss whether new foundations are being elevated above any defined BFEs or other similar water/flood elevation measure to ensure that the structures are resilient to future flooding risks. This value can be determined either through use of the Tier 2/3 methodologies provided by the MA Resilience Design Tool, or reasonably estimated through comparison with the current 100-year BFEs determined for the project site or adjacent locations. Flood insurance studies performed by FEMA can also be consulted as a resource (with higher storm events chosen as a proxy for future climate conditions).[7]

Where impervious/semi-pervious area is created and stormwater management is required, the Single EIR should address the recommendations from the MA Resilience Design Tool, including whether the stormwater management designs will be resilient to future climate conditions including the 50-year (2% chance) storm as of 2070 based on the relevant output report from the Tool. As noted, the Single EIR should clarify the total extent of tree clearing, and indicate whether significant vegetation removal is proposed near EJ areas or "Hot Spots" as identified by the RMAT data dashboard.[8] The Single EIR should indicate whether stormwater design will exacerbate any flooding into any nearby residential areas.

Construction Period and Hazardous Waste

The Single EIR should confirm that the project will include a spills contingency plan that

[7] https://msc.fema.gov/portal/advanceSearch

[8] https://resilientma-mapcenter-mass-eoeea.hub.arcgis.com/. As explained in the dashboard, a statewide Land Surface Temperature (LST) Index was created by combining estimates of surface temperature from days in 2018, 2019, and 2020 where the high air temperature exceeded 70 degrees Fahrenheit. "Hot spots" are areas with the 5% highest LST Index values within each RPA region.

addresses prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction activities. It should confirm that this plan will be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential releases. The Single EIR should identify the terms of the AUL that intersects the project corridor and the project's consistency with the AUL. The Single EIR should address comments from MassDEP, which state that if dewatering activities are to occur at a site with contaminated groundwater, or in proximity to contaminated groundwater where dewatering can draw in the contamination, a plan must be in place to properly manage the groundwater and ensure site conditions are not exacerbated by these activities. MassDEP further states that, due to the detection of per- and poly-fluoroalkyl substances (PFAS) in groundwater near the Spectacle Pond municipal drinking water well on Spectacle Pond Road (RTN 2-20964) and the tire recycling facility at 43 Willow Road (RTN 2-17951) in Ayer, evaluation of PFAS, and other site related contaminants as necessary, should be conducted if dewatering is performed in areas that could be affected by releases from these sites. The Single EIR should clarify whether dewatering is proposed in these areas.

Mitigation and Draft Section 61 Findings

The Single EIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize, and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations. As noted above, the Proponent is expected to expand upon the mitigation measures included in the Draft Section 61 Findings provided in the EENF. The Single EIR should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (land alteration, ACEC, traffic, wetlands, rare species, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project. The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase.

Responses to Comments

The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. In order to ensure that the issues raised by commenters are addressed, the Single EIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. This directive is not intended, and shall not be construed, to enlarge the scope of the Single EIR beyond what has been expressly identified in this certificate.

Circulation

The Proponent should circulate the Single EIR to each Person or Agency who previously commented on the EENF, each Agency from which the Project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope. The Proponent may circulate copies of the Single EIR to commenters other than Agencies in a digital format (e.g., CD-ROM, USB drive) or post to an online website. However, the Proponent should make available a

reasonable number of hard copies to accommodate those without convenient access to a computer to be distributed upon request on a first come, first served basis.

January 29, 2024
Date

Rebecca L. Tepper

Comments received:

01/22/2024 Massachusetts Department of Transportation (MassDOT)
01/23/2024 Massachusetts Department of Conservation and Recreation (DCR)
01/23/2024 Massachusetts Department of Environmental Protection (MassDEP), Central Regional Office (CERO)
01/24/2024 Massachusetts Department of Environmental Protection (MassDEP), Waterways Regulation Program (WRP)

01/25/2024 Massachusetts Division of Fisheries and Wildlife (MassWildlife), Natural Heritage and Endangered Species Program (NHESP)

RLT/ELV/elv

Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbits-Nutt, Secretary & CEO

massDOT
Massachusetts Department of Transportation

January 22, 2024

Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: Ayer et. al. – 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project – EENF
(EEA # 16784)

ATTN: MEPA Unit
Purvi Patel

Dear Secretary Tepper:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the Expanded Environmental Notification Form (EENF) filed for the proposed 313/343/O141/P142 Asset Condition Refurbishment and Access Road Improvement Project starting in Ayer and running through Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

cc: Jonathan Gulliver, Administrator, Highway Division
Carrie Lavallee, P.E., Chief Engineer, Highway Division
Barry Lorion, P.E., District 3 Highway Director
James Danila, P.E., State Traffic Engineer
Montachusett Regional Planning Commission (MRPC)
Central Massachusetts Regional Planning Commission (CMRPC)

MEMORANDUM

TO: David J. Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E., Manager
Public/Private Development Unit

DATE: January 22, 2024

RE: Ayer et. al. – 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project – EENF
(EEA # 16784)

The Public/Private Development Unit (PPDU) has reviewed the Expanded Environmental Notification Form (EENF) for the proposed 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project starting in Ayer and running through Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury submitted by TRC Environmental Corp. on behalf of New England Power Company d/b/a National Grid (NEP) (the "Proponent"). The Project entails improvements that will create short and long term road access for the refurbishment and maintenance of transmission lines. The Project will also be used immediately to support the O141/P142 and Line 313/343 ACR work. The Project is located within an existing Right-of-Way (ROW) which begins at Sandy Pond Substation in Ayer and terminates at Millbury #3 Substation in Millbury. The access road improvements extend to two taps off the main ROW and terminate at the existing Bloomingdale and Nashua Street substations in Worcester.

The Project surpasses MEPA thresholds for review of an Environmental Notification Form (ENF) and an Environmental Impact Report (EIR) due to impacts on land per 301 CMR 11.03(1) and wetlands per 301 CMR 11.03(3). The Project also requires an Environmental Impact Report (EIR) per 301 CMR 11.06(7)(b) as the utility route intersects several Designated Geographic Areas surrounding Environmental Justice (EJ) Populations.

The Project route will intersect with the state jurisdictional highway layout at multiple locations. Project-related construction in these locations will require a temporary access permit for construction activities and/or a utility access permit to be issued by MassDOT District 3. Further MassDOT permits will be required for temporary construction access, overhead wire crossings, and new access roadway and/or improvements proposed within the state highway ROW. Additionally, MassDOT District 3 will require details for any access road tie-ins to roads falling under state jurisdiction.

Once completed, the Project is not expected to result in additional vehicle trips on an average weekday, except for the occasional or yearly maintenance activities. MassDOT does

not anticipate that these activities would significantly impact the transportation system and therefore recommends no further review for environmental impacts on the state transportation system. The Proponent should coordinate with MassDOT District 3 to minimize traffic disruption during Project construction and prevent impacts on state jurisdictional roadways. If you have any questions regarding these comments, please contact *William.M.Simon@dot.state.ma.us*.

dcr
Massachusetts

January 22, 2024

Secretary Rebecca L. Tepper
Executive Office of Energy and Environmental Affairs
Attn: Eva Vaughan
100 Cambridge Street, Suite 900
Boston Massachusetts 02114

Re: EEA #16784, National Grid Line 313/343/O141/P142 ACR and Access Road Improvement Project (Ayer, Shirley, Lancaster, Sterling, West Boylston, Shrewsbury, Worcester, Grafton, and Millbury) - EENF

Dear Secretary Tepper:

The Department of Conservation and Recreation ("DCR" or the "Department") is pleased to submit the following comments in response to the Expanded Environmental Notification Form ("EENF") filed by TRC Environmental Corporation on behalf of the New England Power Company ("Proponent"). As proposed, the Project includes Asset Condition Refurbishment ("ACR") for line 313/343/O141/P142 and improvements for associated access roads within an existing electrical transmission right-of-way. Portions of the project are located within the watershed of DCR's Wachusett Reservoir, which is a public drinking water supply.

The DCR, Division of Water Supply Protection has reviewed this Project relative to the Watershed Protection Act (M.G.L. c. 92A 1/2) and applicable regulations (313 CMR 11.00). Based upon review of the submitted EENF and plans, it appears that this project may meet the criteria for an exemption as stated in 313 CMR 11.05(11) for "Maintenance of Public Utilities." DCR requests that the Proponent contact Bernadette DeBlander to discuss the filing of a Request for Watershed Determination of Applicability and to request a Temporary Access Permit from the DCR Wachusett Reservoir Region Office. DCR also requests that the Proponent review plans to identify options for blocking certain access areas to potential use by All-Terrain Vehicles and motorized dirt bikes.

Thank you for the opportunity to comment on the EENF. Should you have any questions please do not hesitate to contact Bernadette DeBlander of the Division of Water Supply Protection at (857) 303-5427 or Bernadette.DeBlander2@mass.gov.

Sincerely,

Brian Arrigo
Commissioner

cc: Priscilla Geigis, Patrice Kish, John Scannell, Peter Mulcahy, Bernadette DeBlander

Department of Conservation and Recreation
10 Park Plaza, Suite 6480
Boston, MA 02116
617-626-1250 617-626-1351 Fax
www.mass.gov/dcr

Maura T. Healey
Governor

Kimberley L. Driscoll
Lt. Governor

Rebecca L. Tepper, Secretary
Executive Office of Energy & Environmental Affairs

Brian Arrigo, Commissioner
Department of Conservation & Recreation

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Central Regional Office • 8 New Bond Street, Worcester MA 01606 • 508-792-7650

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

January 22, 2023

Secretary Rebecca Tepper
Executive Office of Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Attention: MEPA Unit – Eva Vaughan

Re: Expanded Environmental Notification Form (EENF)
New England Power Company d/b/a National Grid Line 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project
Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury
EEA #16784

Dear Secretary Tepper,

The Massachusetts Department of Environmental Protection's ("MassDEP") Central Regional Office has reviewed the EENF for the proposed New England Power Company d/b/a National Grid Line 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project (the "Project"). New England Power Company (the "Proponent") is proposing to construct access road improvements and grading to create permanent work pads in a shared Right-of-Way (ROW) that includes several transmission lines. The access improvements will create short- and long-term access to the transmission lines that will enable the Proponent to inspect, maintain, repair and otherwise undertake the activities necessary to safely maintain the reliability of the transmission lines. The access road improvements will be used immediately to support the O141/P142 and Line 313/343 ACR work, which involves replacing structures and installing Optical Ground Wire.

The Project is under MEPA review because it meets or exceeds the following review thresholds:

301 CMR 11.03(3)(a)(1)(a) - alteration of one or more acres of salt marsh or bordering vegetating wetlands;

301 CMR 11.03(1)(b)(1) - Direct alteration of 50 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices;
301 CMR 11.03(2)(b)(2) - Greater than two acres of disturbance of designated priority habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern;
301 CMR 11.03(3)(b)(1)(b) - alteration of 500 or more linear feet of bank along a fish run or inland bank;
301 CMR 11.03(3)(b)(1)(d) - alteration of 5,000 or more sf of bordering or isolated vegetated wetlands;
301 CMR 11.03(11)(b) - Any Project of ½ or more acres within a designated ACEC, unless the Project consists solely of one single family dwelling.

The Project requires the following State Agency Permits:

MassDEP - Superseding Orders of Condition (if local Orders of Condition are appealed);
MassDEP – 401 Water Quality Certification;
Massachusetts Department of Conservation and Recreation (MassDCR) – Construction Access Permit;
MassDCR – Watershed Protection Act Permit;
Natural Heritage and Endangered Species – Conservation Management Permit (if needed);
Massachusetts Department of Transportation (MassDOT) - State Highway Access Permit;
MassDOT – Non-Municipal Utility Permits.

The Project is located within one or more Designated Geographic Areas around an Environmental Justice Population. Therefore, an EIR is required in accordance with 301 CMR 11.06(7)(b). MassDEP offers the following comments on the Project:

Wetlands

The EENF states that the Project will permanently alter 4.7 acres of Bordering Land Subject to Flooding ("BLSF"), 20.1 acres of Riverfront Area ("RA"), and 93.2 acres of Buffer Zone ("BZ") to Bank and Bordering Vegetated Wetlands ("BVW"). Temporary alterations, primarily due to timber matting, will impact 3.6 acres of BLSF, 4.6 acres of RA, 19.7 acres of BVW, 1.4 acres of Land Under Water Bodies and Waterways ("LUW"), and 3,054 linear feet of Bank. The Proponent states that some of the work will occur within the footprint of existing access roadways.

The Proponent will be required to submit NOIs for proposed work within wetland resource areas and Buffer Zone, to the Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury Conservation Commissions (the "Commissions"), and MassDEP. Upon receipt of the NOI filings, MassDEP may provide project-specific comments to the Commissions and the Proponent as part of the File Number Issuance Notification Letters.

Portions of the Project are located within Natural Heritage and Endangered Species Program ("NHESP") Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife. Because NHESP review of the Project is ongoing, MassDEP recommends that the Commissions wait to receive a response from NHESP before closing the public hearings and issuing Orders of Conditions for the Project. A 401 Water Quality Certification will be required from MassDEP for the Project. The Proponent should verify whether a 401 Water Quality Variance will also be required for work resulting in the discharge of dredged or fill material into wetlands within Outstanding Resources Waters ("ORWs") (314 CMR 9.06(3)) within the Wachusett Reservoir watershed in Boylston, West Boylston, and Sterling, or within 400 feet of the Wachusett Reservoir, a Class A surface water (314 CMR 9.06(4)). As tributaries to the Wachusett Reservoir, all wetlands within the easement between the Boylston/West Boylston town line and Kendall Hill Road in Sterling are ORWs.

MassDEP requests that the Proponent provide additional information related to wetland resource area and BZ impacts; compliance with performance standards for work in Bank, BVW, BLSF, RA, and LUW; wetland restoration; and stormwater management in subsequent MEPA and in the respective NOI filings. The Proponent should quantify proposed temporary and permanent impacts to existing vegetated areas and non-vegetated areas; depict the location of BLSF and associated compensatory flood storage based on surveyed elevations rather than GIS overlays; identify if any access roadways are proposed within new locations and whether any existing access roadways will be abandoned or restored to vegetated conditions; discuss if the upgraded access roads will result in increased use of the easement by unauthorized off-road vehicles, leading to additional damage to wetland resource areas and BZ; describe long-term maintenance requirements for the work pads; and submit Wildlife Habitat Evaluations for impacts to Bank, BVW, LUW, BLSF, and RA.

If culvert replacements or extensions are required due to the widening of access roads, the Proponent should demonstrate that the crossings meet the Massachusetts Stream Crossing Standards to the maximum extent practicable according to the criteria found in 310 CMR 10.53(8).

The EENF states, "Where grading of work pads is proposed in sensitive areas and where feasible, NEP will either remove stone so that the size of the permanent work pad will be reduced by 50% or portions of the work pad will be loamed and seeded for restoration while still allowing for future operation and maintenance accessibility." MassDEP encourages the Proponent to continue its assessment of ways to reduce the size of the permanent work pads proposed within BLSF, RA, and BZ. In addition, the Proponent should confirm whether new access roads and work pads shown within existing active agricultural areas on the Access Plans will be permanent or temporary. When demonstrating compliance with performance standards for work within RA, the Proponent should include work pads, new access roads, and expanded road widths as new degraded areas. MassDEP requests that offsite mitigation and/or restoration of onsite degraded areas be evaluated to compensate for conversion of vegetated areas to degraded areas.

The Massachusetts Stormwater Standards (the "Standards") apply to this Project, and the limited project status of the Project does not allow the Standards to be met only "to the

maximum extent possible" as stated by the Proponent in the EENF. However, much of the Project qualifies as redevelopment, and the Proponent should demonstrate that all redeveloped areas meet the Standards to the maximum extent practicable following the criteria in Volume 2, Chapter 3 of the Massachusetts Stormwater Handbook. The Project will impact 306 acres, and each permanent work pad will be 10,000-12,500 square feet in size. Although work pads, new sections of access road, and widening of access roads will not result in significant forest clearing, many acres of shrub/herbaceous vegetation will be permanently converted to gravel, potentially resulting in an increase in the temperature of surface water runoff, reduction in wildlife habitat, and a decrease in carbon sequestration. The Proponent should show Coldwater Fisheries on the Access Plans and evaluate potential impacts to Coldwater Fisheries and other Critical Areas when demonstrating compliance with the Standards.

Section 61 Findings included in the EENF only commit to mitigation measures already required to achieve compliance with Wetlands Protection Act and Water Quality Certification regulations. MassDEP requests that the Proponent expand the mitigation measures to include mitigation for the large areas of vegetation and soil that will be replaced with gravel throughout the Project, and specifically within BLSF, RA, and BZ.

BWSC

According to the EENF, there are 50 21E listed sites and 96 AULs within one mile of the Project areas. The Proponent should have an LSP available to evaluate potential contamination in the work areas.

The Proponent is advised that excavating, removing and/or disposing of contaminated soil, pumping of contaminated groundwater, or working in contaminated media must be done under the provisions of MGL c.21E (and, potentially, c.21C) and OSHA and may require the submittal of a Release Abatement Plan or to be conducted as a Phase IV Remedial Action. Excavating contaminated soil or pumping contaminated groundwater could be considered response actions under the MCP. Particular attention should be made at the Sandy Pond Substation (RTN 2-0016886) where a release of mineral oil dielectric fluid to soil and groundwater occurred. This site also has an Activity and Use Limitation (AUL).

If oil and/or hazardous materials are identified during the implementation of this Project, notification to MassDEP may be required pursuant to M.G.L. c. 21E and the MCP. A Licensed Site Professional (LSP) should be retained to determine if submittals to MassDEP are required to conduct the work or if notification is required. The BWSC may be contacted for guidance if questions arise regarding contaminated material.

If dewatering activities are to occur at a site with contaminated groundwater, or in proximity to contaminated groundwater where dewatering can draw in the contamination, a plan must be in place to properly manage the groundwater and ensure site conditions are not exacerbated by these activities. Due to the detection of per- and poly-fluoroalkyl substances (PFAS) in groundwater near the Spectacle Pond municipal drinking water well on Spectacle Pond Road (RTN 2-20964) and the tire recycling facility at 43 Willow Road (RTN 2-17951) in

Ayer, evaluation of PFAS, and other site related contaminants as necessary, should be conducted if dewatering is performed in areas that could be affected by releases from these sites.

MassDEP appreciates the opportunity to comment on the Project. If you have any questions regarding these comments, please do not hesitate to contact JoAnne Kasper-Dunne, Central Regional Office MEPA Coordinator, at (508) 767-2716.

Very truly yours,

Mary Jude Pigsley
Regional Director

cc: Commissioner's Office, MassDEP

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

Memorandum

To: Eva Vaughan, Environmental Analyst, MEPA

From: Alice Doyle, Waterways Regulation Program, MassDEP

Cc: Daniel J. Padien, Program Chief, Waterways Regulation Program, MassDEP

Re: Comments from the Chapter 91 Waterways Regulation Program
EEA #16784 – Expanded Environmental Notification Form
Asset Condition Refurbishment (ACR) and Access Road Improvement Project
Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury, Worcester and Middlesex Counties

Date: January 24, 2024

The Department of Environmental Protection Waterways Regulation Program (the "Department") has reviewed the Expanded Environmental Notification Form (EENF) #16784 submitted by TRC Companies Inc. on behalf of New England Power Company d/b/a National Grid (the "Proponent") to perform access road improvements and refurbishment of existing electric overhead transmission lines. The project is located within an existing Right-of-Way (ROW) between Ayer and Millbury containing two sets of transmission lines and is approximately 35 miles in length (the "project site"). The access road improvements include the construction of permanent work pads, to be utilized for this and future asset replacement and maintenance work. Where this construction may impact sensitive resources including wetlands and streams, or where it is not feasible to place a work pad, temporary construction mats are proposed to be used.

Chapter 91 Jurisdiction

The project site includes a number of waterways subject to Chapter 91 jurisdiction. A table in the EENF lists four DEP licenses for utility line construction, relocation, reconstruction, and maintenance, for lines originally constructed in 1929 and 1969 and relocated and reconstructed in 1988 and 1989 (License Nos. 1846, 1847, 1993, 1994). The Proponent states that there may be additional applicable Chapter 91 licenses which it will research further.

Regulatory Review

The Asset Refurbishment may qualify for maintenance under 310 CMR 9.22(1), as noted in the EENF. However, there are several locations in the project site where temporary construction mats span a stream in order to perform the line refurbishment work. This can be seen on several of the Access Plans, but no detailed

plans showing the construction mats relative to Ordinary High Water are included with the EENF. The Wetlands, Waterways, and Tidelands section of the EENF indicates 1.4 acres of temporary impact to Land under Water. Detailed plans that include the High Water Mark, which is the Chapter 91 jurisdictional boundary for the navigable portions of non-tidal rivers and streams, will be necessary for the Department to determine if licensing is required for that scope of work. The Proponent is encouraged to submit plans with the necessary Chapter 91 information with the Environmental Impact Report. Consultation with the Department is also encouraged for a full review of the scope of work as it relates to Chapter 91 licensing.

If you have any questions regarding the Department's comments, please contact Alice Doyle at alice.doyle@mass.gov.

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

January 22, 2024

Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Eva Vaughan, EEA No. 16784
100 Cambridge St.
Boston, Massachusetts 02114

Project Name:	*Line 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project*
Proponent:	*New England Power Company d/b/a National Grid (NEP)*
Location:	*Existing Right-of-Way in Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury*
Document Reviewed:	*Expanded Environmental Notification Form*
EEA No.:	*16784*
NHESP No.:	*23-10977*

Dear Secretary Tepper:

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the "Division") has reviewed the above-noted submission to the MA Environmental Policy Act Office and would like to offer the following comments regarding state-listed species and their habitats.

According to the Massachusetts Natural Heritage Atlas (15th Edition), portions of the Project site are mapped as Priority Habitat for Blanding's Turtle (*Emydoidea blandingiil,* Threatened), Wood Turtle (*Glyptemys insculpta*, Special Concern), Blue-spotted Salamander (*Ambystoma laterale* pop. 1, Special Concern), Common Loon (*Gavia immer*, Special Concern), Eastern Whip-poor-will (*Antrostomus vociferus*, Special Concern), Climbing Fern (*Lygodium palmatum*, Special Concern), and Orange Sallow Moth (*Pyrrhia aurantiago*, Special Concern). These species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (MGL c.131A) and its implementing regulations (MESA; 321 CMR 10.00). All projects or activities proposed within Priority Habitat, which are not otherwise exempt pursuant to 321 CMR 10.14, require prior review through a direct filing with the Division for compliance with the MESA Regulations (321 CMR 10.18).

The MESA is administered by the Division and prohibits the "Take" of state-listed species, which is defined as "in reference to animals…harm…kill…disrupt the nesting, breeding, feeding or migratory activity…and in reference to plants…collect, pick, kill, transplant, cut or process…Disruption of nesting, breeding, feeding, or migratory activity may result from, but is not limited to, the modification, degradation, or destruction of Habitat" of state-listed species (321 CMR 10.02).

The Project, as proposed and described in the EENF, includes the establishment and improvement of access roads, pull pads and work pads within the existing 35.7-mi ROW to support equipment access for upcoming refurbishment of the existing 345kV and 115kV electrical lines present.

Based on the information submitted and in advance of a formal filing pursuant to the MESA, the Division cannot determine whether the Project as proposed in the EENF can be sufficiently conditioned to avoid a prohibited Take (321 CMR 10.18(2)(b)) of state-listed species habitats. If the Division determines the project will result in a Take of state-listed species, then the project may only be permitted if they meet the performance standards for a Conservation and Management Permit (CMP; 321 CMR 10.23). In order for a project to qualify for a CMP, the applicant must demonstrate that the project has avoided, minimized and mitigated impacts to state-listed species consistent with the following performance standards: (a) adequately assess alternatives to both temporary and permanent impacts to the state-listed species, (b) demonstrate that an insignificant portion of the local population will be impacted, and (c) develop and agree to carry out a conservation and management plan that provides a long-term net benefit to the conservation of the state-listed species.

The Division will not render a final decision until the MEPA review process and its associated public comment period is complete and until all required MESA filing materials are submitted by the proponent to the Division. As the MESA review process is not complete, no alteration to the soil, surface, or vegetation associated with the proposed Project shall occur until the Division has made a final determination.

If you have any questions about this letter, please contact Lauren Glorioso, Endangered Species Review Biologist, at (508) 389-6361 or Lauren.Glorioso@mass.gov. We appreciate the opportunity to comment on the Project.

Sincerely,

Everose Schlüter

Everose Schlüter, Ph.D.
Deputy Director

Cc: Daniel J. Herzlinger, TRC Companies
Erin Whoriskey, National Grid
MassDEP Northeast Regional Office
MassDEP Central Regional Office
Town of Ayer Board of Selectmen
Town of Ayer Planning Board
Town of Ayer Conservation Commission
Town of Shirley Board of Selectmen
Town of Shirley Planning Board

Town of Shirley Conservation Commission
Town of Lancaster Board of Selectmen
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Town of Grafton Board of Selectmen
Town of Grafton Planning Board
Town of Grafton Conservation Commission
Town of Millbury Board of Selectmen
Town of Millbury Planning Board
Town of Millbury Conservation Commission

Appendix C: EG-303NE

PURPOSE/OBJECTIVE:

This document provides National Grid personnel, consultants and contractors with Best Management Practices (BMPs) for conducting work on electric and natural gas transmission and distribution rights-of-ways (ROWs) and substations in New England.

WHO:

These BMPs are to be followed by all personnel conducting work on Company electric and gas ROWs and substations in New England. These BMPs do not apply to Company employees and contractors performing routine vegetation management activities that are not a part of construction or re-construction projects. Employees and contractors maintaining vegetation on Company ROWs and substations must follow the National Grid ROW Vegetation and Substation Vegetation Management Plans.

DEFINITIONS:

Refer to **Glossary** in **Appendix 1** and **Acronyms** in **Appendix 2**.

WHAT TO DO:

1.0 Project Planning

Prior to the start of any project (proposed new facilities or maintenance of existing facilities), the Project Engineer or other project planner shall determine whether any environmental permits or approvals are required, per the state-specific EG-301 environmental checklists. Any questions regarding which activities may be conducted in regulated areas or within environmentally sensitive areas shall be referred to the National Grid Environmental Scientist or Project Environmental Consultant.

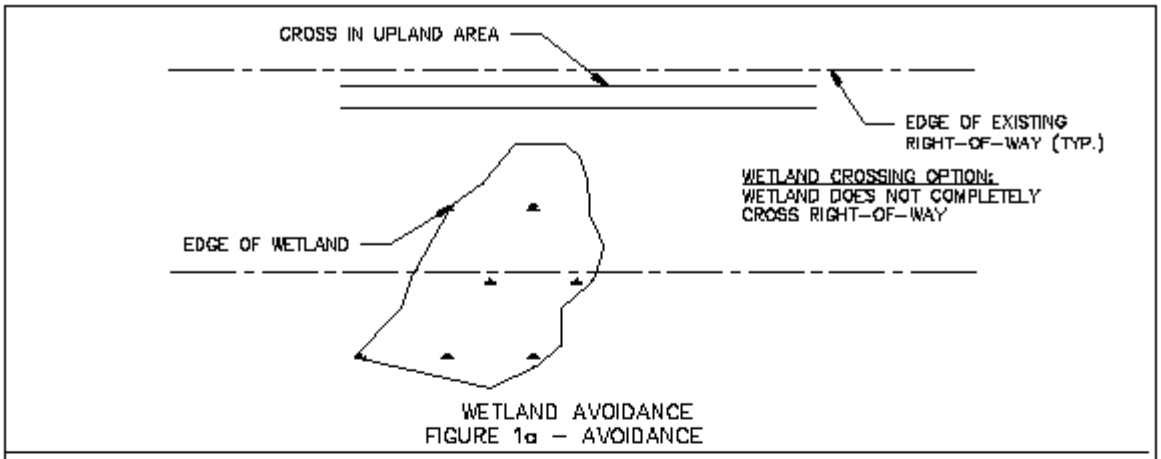
All new construction and maintenance projects shall follow clear and enforceable environmental performance standards, which is the purpose for which these BMPs have been compiled.

1.1 Avoidance and Minimization

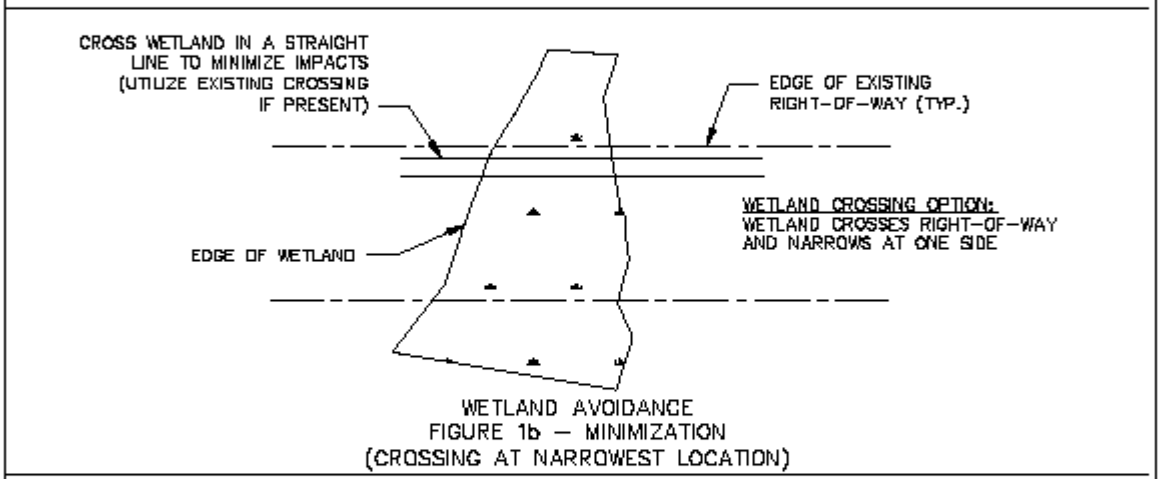
Measures shall always be taken to avoid impacts to wetlands, waterways, rare species habitats, known below and above ground historical/archeological resources and other environmentally sensitive areas. If avoidance is not possible, then measures shall be taken to minimize the extent of impacts. Alternate access routes or staging areas shall always be considered. Below is a list of methods that shall be considered where impacts are unavoidable:

- Use existing ROW access where available. Keep to approved routes and roads without deviating from them or making them wider.
- Off-ROW access shall never be assumed and shall be coordinated through National Grid Real Estate before being implemented.
- Where no existing ROW access is present, avoid wetlands and if a wetland crossing is necessary, cross wetlands at the most narrow point possible or at the location of a previously used crossing (if evident). Figure 1 below illustrates this minimization technique.

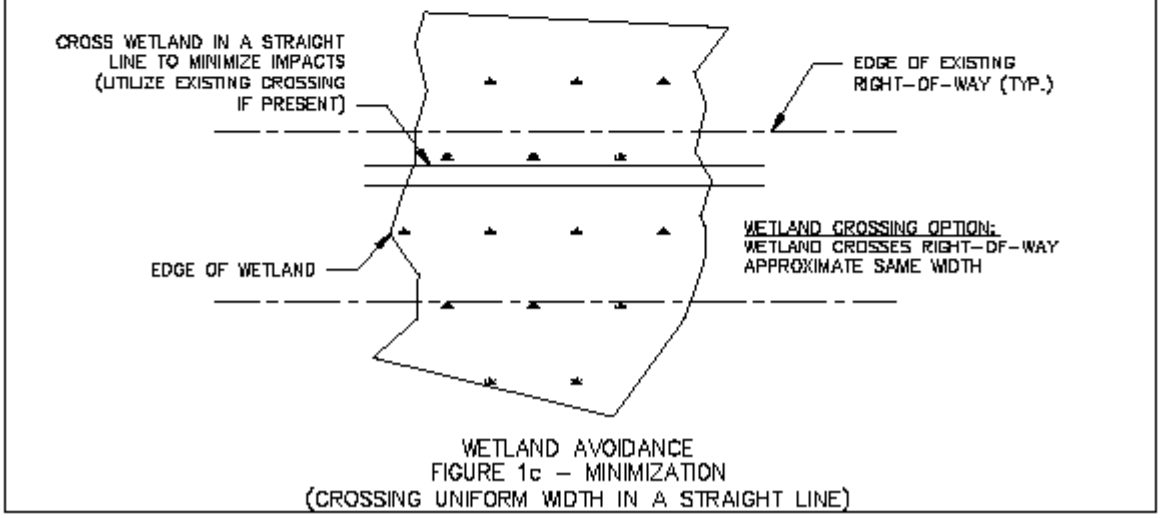
- Avoid and minimize stream crossings.
- Minimize the width of typical access roads through wetlands to a maximum width of 16 feet.
- Conduct work manually (without using motorized equipment) in wetlands, wherever possible.
- Use construction mats in wetlands to minimize soil disturbance and rutting when crossing or working within wetlands. When not using mats for access, standard vehicles shall not be allowed to drive across wetlands without the prior approval of the National Grid Environmental Scientist. Use of a low ground pressure (LGP) vehicle may be a feasible alternative to mats provided that such LGP vehicle use has been reviewed and approved by the National Grid Environmental Scientist. See Section 7.0.
- Coordinate the timing of work to cause the least impacts during the regulatory low-flow period under normal conditions, when water/ground is frozen, after the spring songbird nesting season, and, outside of the anticipated amphibian migration window (mid-February to mid-June). Refer to the United States Army Corps of Engineers (USACE) state-specific General Permit for the definition of the low-flow period in each state at: http://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/. A summary table is provided in Section 7.0.
- Seek alternative routes or work methods to minimize impact.



WETLAND AVOIDANCE
FIGURE 1a – AVOIDANCE



WETLAND AVOIDANCE
FIGURE 1b – MINIMIZATION
(CROSSING AT NARROWEST LOCATION)



WETLAND AVOIDANCE
FIGURE 1c – MINIMIZATION
(CROSSING UNIFORM WIDTH IN A STRAIGHT LINE)

1.2 Historically Significant Areas

Areas that have been identified as historically and/or culturally significant shall be avoided in accordance with site-specific avoidance plans, as applicable. Refer to the project-specific Environmental Field Issue (EFI) for any applicable avoidance plans or consult with the National Grid Environmental Scientist. Demarcation of these areas to be avoided shall use staked orange snow fencing or an equivalent physical barrier (not just ribbon flagging) and signage. Refer to Section 14.0 for signage guidance.

1.3 Rare Species Habitat

Work within areas that have been identified as mapped rare species habitat shall follow site-specific requirements, as applicable. In Massachusetts, maintenance activities within mapped habitat (known as Priority Habitat of Rare Species) shall follow the BMPs outlined in the Natural Heritage Endangered Species Program (NHESP)-approved National Grid Operation and Maintenance Plan. Work in mapped rare species habitat may require, at a minimum, turtle training for crews and sweeps of work areas for turtles, botanist identification of rare plant locations and avoidance of these locations, and protection of vernal pools, all prior to the start of work. Demarcation of these areas to be avoided (e.g., rare plant populations, overwintering turtles, nests) shall use staked orange snow fencing or an equivalent physical barrier (not just ribbon flagging) and signage. Refer to Section 14.0 for signage guidance.

Where new substations are being constructed or existing substations are undergoing a rebuild or expansion, and the substations are located in mapped rare turtle habitat, project team members should consider fenceline improvements or measures needed to prevent/eliminate turtle entrance into the substation or allow multiple points for easy egress such that turtles are not trapped within the substation fenceline.

Other requirements may apply in NH, VT and RI. Refer to the project-specific EFI for any applicable measures or consult with the National Grid Environmental Scientist.

1.4 Meetings

Pre-permitting meetings shall take place early in the project development process to determine what permits are triggered by the proposed work and the timeline required for permitting. During these meetings, the team shall develop access plans and BMPs to be used during construction of the project.

Field / Constructability review meetings shall take place on-site to evaluate construction site access and job site set-up, to ensure that the project can proceed as permitted. It is at this point in time where work areas, pulling locations, laydown areas, parking areas, and equipment storage areas are evaluated and located. Off-ROW areas under consideration should be included in this discussion.

Prior to submitting permit plans to regulatory authorities, the construction group (contractor or National Grid) shall review the plans for final sign off.

Pre-construction meetings are typically held prior to the commencement of all work to appoint responsible parties, discuss timing of work, and further consider options to avoid and/or minimize impacts to sensitive areas. These meetings can occur on- or off-site and shall include all the willing and available stakeholders (i.e., utility employees, contractors, consultants, inspectors, and/or monitors, and regulatory personnel). Training of crews and supervisors of the EFI, Stormwater Pollution Prevention Plan (SWPPP), rare species, and other permit requirements shall be conducted at a pre-construction meeting.

Pre-job briefings shall be conducted daily or otherwise routinely scheduled meetings shall be conducted on-site with the work crew throughout the duration of the work. These meetings are a way of keeping everyone up to date, confirming there is consensus on work methods and responsibilities, and ensuring that tasks are being fulfilled with as little impact to the environment as possible.

The Project Environmental Scientist/Monitor and Construction Project Manager shall communicate regularly (e.g. weekly or bi-weekly meetings or phone conversations) to discuss the work completed since last communication (i.e. work locations, wetland impacts, equipment used, and unexpected delays or work conditions). These meetings or calls shall include the expected schedule of construction for the upcoming week, the long term construction plans, and planned methods for working near/in wetlands. Both the Project Environmental Scientist/Monitor and Construction Project Manager shall work together so the Project complies with all environmental permits and regulations. When changes to the Project scope or agreed work plan are proposed they shall be done so with the final approval of the National Grid Environmental Scientist.

1.5 Communication of Project Specific Environmental Requirements

Project specific environmental concerns, to include sensitive resources, permits, approved access and time-of-year or other restrictions, shall be communicated to the project team and be included as part of the Pre-Bid and Pre-Construction Meetings. Project specific requirements shall be communicated to the project manager/construction manager/engineering group using the following guidelines:

Environmental Field Issue – The EFI will be a full document consisting of narrative, project permits, access and matting plans. A table summarizing pertinent (but not all) permit conditions and the responsible party for those conditions shall be included in the EFI. Copies of all permits should be included as attachments. This will be prepared for most projects with multiple permits or large, complex projects (siting board, Section 404, 401 WQC, SWPPP). There shall be EFI training at the pre-construction meeting. The National Grid EFI template is located in **EI-303NE**.

Simplified Environmental Field Issue – The Simplified EFI is a memorandum containing environmental resources present, project permit(s), access and matting plans and a table summarizing relevant permit conditions and responsible party for those conditions. Copies of all permits should be included as attachments. The Simplified EFI will be prepared for most projects with 1 or 2 permits (Order of Conditions, S404 Cat 1). The Simplified EFI should also be provided for projects that have environmental resources present, but the scope of the project does not trigger environmental permitting (e.g., the scope of work qualifies for maintenance exemption(s)). The resources present

shall be discussed at the Pre-Bid and Pre-Construction meetings and any changes in scope will require additional review by the National Grid project team.

E-mail delivery of Permit and any Sediment/Erosion control or BMP plan – For those projects with only one permit (eg., MA Order of Conditions, RI DEM permit, RI CRMC permit, NH Utility Notification) or projects with a sediment & erosion control plan (local town requirement or for exempt maintenance work), a copy of the permit and any applicable plan will be emailed to the Project Manager (and the project team where deemed necessary) to be incorporated into the Construction Field Issue.

STORMS work management system input – For STORMS work, no EFI is prepared unless multiple permits are required for the project (see guidance above). If only a MA Order of Conditions, MA Determination of Applicability, RI DEM permit, RI CRMC permit, RI SESC Approval, or NH Utility Notification is required, then the permit is attached in the Documents tab and conditions noted in Remarks/Comments section. Standard STORMS boilerplate language is located in **EI-303NE**.

1.6 Timing of Work

Regulatory authorities may place seasonal or time-of-year restrictions on project construction elements. These time-of-year restrictions may be state or permit-specific, and shall be adhered to.

Work during frozen conditions. Activities conducted once wetland areas are frozen sufficient to minimize rutting and other impacts to the surrounding environment may be authorized by the National Grid Environmental Scientist. Work during this time also generally reduces disturbance of aquatic and terrestrial wildlife movement by avoiding sensitive breeding and nesting seasons. When not using mats for access, vehicles shall not be allowed to drive across wetlands without the prior approval of the National Grid Environmental Scientist.

Work during the regulatory low-flow period. Conducting work during the low-flow period can reduce impacts to surface water and generally avoids spawning and breeding seasons of aquatic organisms. If the water is above normal seasonal levels, adjustments to work activities and methods are required.

1.7 Alternate Access

1.7.1 Manual Access

In some cases such as for smaller projects, work areas can be accessed manually. This includes access on foot through upland and shallow wetland areas, access by boat through open water or ponded areas, and climbing of structures where possible. Smaller projects, such as repair of individual structures, or parts of structures, that do not categorically require the use of heavy machinery, shall be accessed manually to the greatest extent practicable.

1.7.2 Use of Overhead/Aerial Access

Using helicopters can be expensive and is not always feasible, but it may be appropriate in some situations in order to get workers and equipment to a site that otherwise may be very difficult to access. The use of overhead and/or aerial equipment may be beneficial for work in areas where larger water bodies, deep crevices, or mountainous areas hinder ground access. The landing area for

helicopters shall be reviewed for environmentally sensitive resources. Use of helicopters requires Project Manager and Senior Management approval.

2.0 Inspection, Monitoring and Maintenance

All construction practices and controls shall be inspected on a regular basis and in accordance with all applicable permits and local, state, and federal regulations to avoid and correct ANY damage to sensitive areas.

The construction crews shall be responsible for completing daily inspections, and IMMEDIATELY bring any **damage or observed erosion, or failed erosion controls** to the attention of the Person-In-Charge and the National Grid Environmental Scientist. Where applicable and/or as directed by environmental permits issued for the project, the Project Environmental Consultant shall conduct weekly (at a minimum) inspections of the project work areas and shall document their inspection using the Stormwater, Wetlands & Priority Habitat Environmental Compliance Site Inspection / Monitoring Report form found in **Appendix 3** and issue the report within 24 hours. The Person-in-Charge shall work with the National Grid Environmental Scientist and the Project Environmental Consultant to determine when and how the repairs shall be made.

Project-specific Action Logs and Long-Term Restoration Logs are prepared as needed by the National Grid Environmental Scientist or the Project Environmental Consultant to track issues and/or repairs and assign responsible parties.

3.0 Best Management Practices

The BMP sections presented in this EG address access, construction, snow and ice management, structures in wetlands, access road maintenance and repair, clean-up and restoration standards, ROW gates, field refueling and maintenance operations, management of spills/releases, and a summary of key construction BMPs.

Note that BMPs shown on any permit drawings for a specific project may need to be revised and or supplemented during the execution of a project based on unforeseen or unexpected factors such as extreme weather or unknown subsurface conditions. It is the responsibility of the Contractor to work with the National Grid Environmental Scientist and/or the Project Environmental Consultant to identify necessary changes and to ensure that construction-related impacts to wetlands, water bodies and other environmentally sensitive areas are avoided.

Any deviation from the approved BMPs shown in the EFI and/or SWPPP plans shall be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting or could result in a permit violation.

3.1 Wetland Boundary Demarcation

Prior to the start of any activity conducted under an environmental permit, wetland boundaries shall be reviewed. Flagging for wetland boundaries, stream banks and other resource areas shall be

refreshed as needed. This may become particularly important when the original flagging was placed in previous seasons and now may have become obscured.

3.2 Sedimentation and Erosion Controls

Appropriate sedimentation and erosion control devices shall be installed at work sites, in accordance with permit conditions and/or regulatory approvals, and as needed to prevent adverse impacts to water resources and adjacent properties.

The overall purpose of such controls is to prevent and control the movement of disturbed soil and sediment from work sites to adjacent, undisturbed areas, and particularly to water resources, public roads and adjacent properties. All proprietary controls shall be installed per manufacturer's recommendations and specifications.

Appropriate sedimentation and erosion control devices include but are not limited to: silt fencing, straw bales, wood chip bags, straw wattles, compost socks, erosion control blankets, mulch, slope interruption practices, flocculent powder/blocks and storm drain/catch basin inlet protection. Such controls shall be installed between the work area and environmentally sensitive areas such as wetlands, streams, drainage courses, roads and adjacent property when work activities shall disturb soils and result in a potential for causing sedimentation and erosion.

In Massachusetts, use of monofilament-encased wattles shall be avoided in mapped Priority Habitat for snakes and amphibians. For projects with work within mapped Priority Habitat for snakes and amphibians, wattles that are encased in a sock, hemp, fiber, or movable jute netting are required to prevent entrapment. Also, "wildlife gaps" should occur every 50 feet, if possible, given wetland permit conditions. This spacing of the wattles allows snakes and amphibians to move across the ROW. Refer to the Amphibian and Reptile BMPs in **Appendix 4**.

Staked straw bales often serve as the demarcation of the limits of work and/or sensitive areas to be avoided. Work shall never be conducted outside the limit of erosion controls without prior approval from the National Grid Environmental Scientist.

Project plans depict proposed erosion controls, however field conditions may warrant additional practices be implemented (e.g., wet conditions, frozen conditions, poorly drained soils, steep slopes, materials used for work pads, transition areas to construction mats, number of trips across work areas, etc.).

Any deviation from the approved erosion controls shown in the EFI and/or SWPPP plans needs to be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting or result in a permit violation.

Appendix 4 provides typical sketches of common sedimentation and erosion controls. If a SWPPP is required for the project, maintenance and inspection of erosion controls shall follow the SWPPP requirements. Sedimentation and erosion controls shall be properly maintained and inspected on a

periodic basis, until work sites are properly stabilized and restored. Inspections shall be documented using the Inspection Form "Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection/Monitoring Report" (**Appendix 3**).

The sequence and timing of the installation of sedimentation and erosion control measures is critical to their success. Sedimentation and erosion controls shall be installed prior to commencing construction activities that may result in any soil disturbance or cause otherwise polluted site runoff. Inspection of these devices may be required by the National Grid Environmental Scientist or by regulators prior to the start of work. The installation of water bars and other erosion control measures shall be installed shortly thereafter.

3.3 Concrete Wash Outs

Concrete wash outs shall be used for management of concrete waste. Concrete and concrete washout water shall not be deposited or discharged directly on the ground, in wetlands or waterbodies, or in catch basins or other drainage structures. Where possible, concrete washouts shall be located away from wetlands or other sensitive areas. Consult the National Grid Environmental Scientist on proposed concrete wash out locations prior to their use. Following the completion of concrete pouring operations, the wash outs shall be disposed of off-site with other construction debris. Refer to BMPs in **Appendix 4**.

3.4 Construction Activities in Standing Water

The use of silt curtains or turbidity barriers may be required when working in or adjacent to standing water such as ponds, reservoirs, low flowing rivers/streams, or coastal areas. Silt curtains and turbidity barriers prevent sediment from migrating beyond the immediate work area into the resource areas.

Coffer dams constructed using sheet piling or large sandbags (Trade names such as "the Big Bag" or "DamItDams") may be used to temporarily isolate and contain a work area in standing water.

When working in standing water, an oil absorbent boom, in addition to a silt curtain or other temporary barrier, shall be placed around the work area for spill prevention.

Work in drinking water reservoirs or other waters may require extensive regulatory agency review, even for maintenance work, which could result in additional time required for permitting, review and material procurement prior to the start of work.

3.5 Dewatering

Where excavations require the need for dewatering of groundwater or accumulated stormwater, the water shall be treated before discharge. Appropriate controls include dewatering basins, flocculent blocks, filter bags, filter socks, or weir tanks. Schematics of these BMPs are included in **Appendix 4**. Water trucks or fractionation tanks may be utilized if watertight containers are desired for controlled on-site discharge or for off-site discharge into an approved dewatering area when site restrictions make it difficult to utilize other dewatering methods on-site. Dewatering discharge water shall never be directed into wetlands, streams/rivers, other sensitive resource areas, catch basins, other

stormwater devices, or substation Trenwa trenches. Dewatering flow shall be controlled so that it does not cause scouring or erosion through the use of a dewatering basin, filter sock, or equivalent. If it is determined that the chosen controls are not appropriately filtering the fine sediment from the dewatering pumpate then the National Grid Environmental Scientist shall be notified immediately and the controls shall be revised or supplemented.

When establishing a dewatering basin, consideration should be given to the anticipated volume of water and rate of pumping in determining the size of the dewatering basin. Dewatering basins shall be constructed on level ground. Once pumping commences, the basin shall be monitored frequently to assure that the rate of water delivery to the structure is low enough to prevent water from flowing, unfiltered, over the top of the basin walls. The basin shall be monitored throughout the dewatering process because the rate of filtration shall decrease as sediment clogs the filter fabric. If the basin is not appropriately filtering the fine sediment from the dewatering pumpate then the basin may need to be supplemented with a flocculent block. Field conditions shall dictate how often the basin should be inspected.

Distance to sensitive areas, direction of flow (toward or away from protected, or sensitive areas, such as wetlands, ponds, or streams), amount of vegetative ground cover between the basin and nearby sensitive areas, ground conditions (ledge, frozen, etc.), volume of water being pumped, and pump-rate, are some of the factors to be considered when determining an inspection frequency. Clogged filter fabric shall be replaced and accumulated sediment shall be removed as necessary from the basins to maintain efficacy.

Any new dewatering location (not previously reviewed and approved by the National Grid Environmental Scientist during project planning or permitting) shall be reviewed and the discharge location approved by the National Grid Environmental Scientist before use.

Complex projects that require large scale dewatering shall require individual review by the National Grid Environmental Scientist and may trigger additional permitting.

Dewatering in areas of known chemical contamination may require a separate NPDES permit, or other approval, and treatment or containment system. Consult with the National Grid Environmental Scientist.

3.5.1 Overnight Dewatering

Some projects may necessitate 24-hour dewatering for on-site construction activities. Overnight dewatering will be evaluated on a case-by-case basis by the National Grid Environmental Department.

If it is necessary to conduct overnight dewatering on a project, a dewatering plan must be submitted to the Environmental Department for review and approval **5 business days prior to beginning dewatering activities**. Sufficient knowledge of flow, discharge, and re-infiltration rate of water must be obtained and submitted for review. The Environmental Department

may require monitored dewatering for a period of time in order to provide this data in support of a request for 24-hour dewatering. The dewatering plan must include at a minimum:

1. Location of dewatering system, system components (basin, frac tank, etc), and materials.
2. Location of discharge and distance from closest wetland.
3. Location of erosion controls. A secondary perimeter of erosion controls will be required around the dewatering system for overnight dewatering.
4. Peak flow, discharge rate and re-infiltration rates.
5. Visual monitoring plan for discharge. Expected duration of dewatering.
6. Emergency provisions if overnight, unattended dewatering is proposed.

3.5.2 Dewatering Clean Up/Restoration

Basins shall be cleaned and removed as soon as dewatering is complete. Sediment removed from the dewatering basin shall be allowed to dry before being disposed of by evenly spreading it over unvegetated upland areas where erosion is not a concern if clean or removing it from the site for proper disposal. Off-site trucking of wet soils is prohibited. The sediment disposal area shall be approved by the National Grid Environmental Scientist or the Project Environmental Consultant prior to use. Stabilization measures shall also need to implemented and approved by the National Grid Environmental Scientist or the Project Environmental Consultant. Soils/sediments shall be dewatered and dried to the point practicable for either on-Site reuse or off-Site transport.

3.6 Check Dams

Check dams are a porous physical barrier installed perpendicular to concentrated storm water flow. They are used to reduce erosion in a swale by reducing runoff energy (velocity), while filtering storm water, thereby aiding in the removal of suspended solids.

Check dams should only be used in small drainage swales that shall not be overtopped by flow once the dams are constructed. These dams should not be placed in streams. Check dams are typically installed in ROWs or on other construction sites prior to the start of soil disturbing work. Per the Rhode Island Soil Erosion and Sediment Control Handbook, no formal design is required for a check dam if the contributing drainage area is 2 acres or less and its intended use is shorter than 6 months; however, the following criteria should be adhered to when specifying check dams.

- The drainage area of the ditch or swale being protected should not exceed 10 acres.
- The maximum height of the check dam should be 2 feet.
- The center of the check dam must be at least 6 inches lower than the outer edges.
- The maximum spacing between the dams should be such that the toe at the upstream dam is at the same elevation as the top of the downstream dam.

Per the NHDES stormwater manual, the use of check dams should be limited to swales with longitudinal slopes that range between 2 to 5 percent that convey drainage from an area less than 1 acre. Existing conditions that exceed these limitations should be assessed in the field and discussed

with the National Grid Environmental Scientist to determine the viability of this BMP for the specific application. Check dams are often comprised of stone, straw bales, sand bags, or compost/silt socks. Use of check dams should be coordinated with the National Grid Environmental Scientist to ensure that the material selection, spacing and construction method are appropriate for the site. Check dams composed of biodegradable materials (e.g. straw bales or wattles, wood chip bags) may require periodic replacement for continued proper functioning[1]. Refer to BMPs in **Appendix 4**.

3.7 Water Bars

Water bars should be used on sloping ROWs to divert storm water runoff from unstabilized or active access roads when needed to prevent erosion. Surface disturbance and tire compaction promote gully formation by increasing the concentration and velocity of runoff. Water bars are constructed by forming a ridge or ridge and channel diagonally across the sloping ROW. Each outlet should be stable. The height and side slopes of the ridge and channel are designed to divert water and to allow vehicles to cross. When siting water bars, consideration shall be given to the sensitivity of the area receiving the diverted runoff. For example, runoff should not be directed into a wetland, waterbody, other environmentally sensitive areas, or to private property or public roadways. Refer to BMPs in **Appendix 4**.

3.8 Retaining Walls

In some situations, retaining walls comprised of concrete blocks, gabions, boulders or other comparable materials may be required to stabilize the shoulder of existing access roads and/or supplement required erosion controls. Installation of such measures shall not be allowed as a maintenance activity. Should these controls be considered for a project, it shall be reviewed by the National Grid Environmental Scientist, as design and additional permitting may be required.

3.9 Slope Stabilization

Temporary slope stabilization practices help to keep exposed, erodible soils stabilized while vegetation is becoming established. Acceptable temporary slope stabilization practices may include the use of erosion control blankets, or hydraulic erosion control. Erosion control blankets, often comprised of natural fibers (e.g., jute, straw, coconut, or other degradable materials) are a useful slope stabilization, erosion control and vegetation establishment practice for ditches or steep slopes. Blankets are typically installed after final grading and seeding for temporary or permanent seeding applications. Hydraulic erosion control practices, including Bonded Fiber Matrix or hydroseed with a soil stabilizer (e.g., tackifier and/or mulch) may be an acceptable or desirable alternative form of temporary slope stabilization. For all practices, manufacturer's specifications should be followed for installation depending on slope and other field conditions. Consult the National Grid Environmental Scientist prior to selecting and installing any slope stabilization practices. Refer to BMPs in **Appendix 4**.

[1] Grass growth on a biodegradable type check dam is evidence that the material is decomposing. While this doesn't mean it is no longer functioning, it means it may be in a weakened condition and could potentially fail under high flow velocity. It is acceptable for grass to be growing on a stone check dam.

3.10 Maintenance of Sedimentation and Erosion Controls

Sedimentation and erosion controls shall be maintained in good operational condition during the course of the work. This includes, but is not limited to, replacing straw bales that are no longer in good condition, re-staking straw bales, replacing or re-staking silt fence, and removing accumulated sediment. Remove sediment before it has accumulated to one half the height of any exposed silt fence fabric, straw bales, other filter berm, check dams or water bars. Accumulated sediment shall be removed from sedimentation basins to maintain their efficacy. Manage the removed sediment by evenly spreading it over unvegetated upland areas where erosion is not a concern, by stockpiling and stabilizing, or by disposing of off-site. Stabilization measures shall also need to be implemented and approved by the National Grid Environmental Scientist or the Project Environmental Consultant. Where a SWPPP has been prepared for a specific site, the guidelines documented therein shall govern the management of sediment.

4.0 Right-of-Way (ROW) Access

Whenever possible, access shall be gained along existing access routes or roads within the ROW. However, in some cases there is no existing access. In many cases, temporary access can be utilized. The following practices provide general guidance on accessing a ROW. Check with a National Grid Environmental Scientist to determine if any environmental permitting is required before utilizing a temporary access.

Note that the building of new roads or enlargement of existing roads is **prohibited** unless this activity is allowed by a project-specific permit, and the new roads appear on the Site Plans that were authorized in the regulatory approvals.

4.1 Off-ROW Access

Off-ROW access shall be evaluated for wetlands, rare species, cultural resources and other potential sensitive receptors, as applicable. National Grid Real Estate and Stakeholder Relations shall also be contacted as soon as possible once off-ROW access is determined to be needed.

4.2 Stabilized Construction Entrance/Exit for Access to ROWs from Public or Private Roads

A suitable (minimum 15-foot wide by 50-foot long) construction entrance/exit shall be installed at the intersection of the ROW access road/route with public/private paved roads, or other such locations where equipment could track mud or soil onto paved roads. The construction entrance/exit should be comprised of clean stone installed over a geotextile fabric. Geotextile fabric may be omitted for permanent construction entrances/exits on a case-by-case basis with the approval of the National Grid Environmental Scientist. Refer to BMPs in **Appendix 4**.

Construction entrance areas shall be monitored and maintained to ensure that stone or other material is not deposited onto the roadway, causing a safety concern. Where track-out of sediment has occurred onto a roadway, it shall be swept off the road by the end of that same work day.

If a construction entrance/exit is clogged with sediment and no longer functions, the sediment and stone may require removal and replacement with additional clean stone (clean stone refreshment) to ensure this tracking pad is performing its intended function adequately. Heavier traffic use may require this clean stone refreshment multiple times throughout a project. Reinforcement of these stabilized construction entrance/exits with asphalt binder or asphalt millings is not likely to be considered "maintenance" and may trigger additional permitting requirements[2]. In some cases, heavily used construction entrances/exits may benefit from the installation of a 5-15 foot strip of asphalt binder or asphalt millings closest to the paved roadway to capture any stone that is tracked from the stone apron. Such cases shall be evaluated on an individual basis with the National Grid Environmental Scientist.

Once work is complete, the construction entrance/exit shall either be removed or retained, depending upon future maintenance-related access needs, property ownership, and/or project-specific approvals. If removed, the area shall be graded, seeded (if adequate root and seed stock are absent) and mulched. Proper approvals for leaving access roads in place shall be obtained; contact the National Grid Environmental Scientist and Property Legal.

4.3 Maintenance of Existing Access Roads

In many cases, the existing access road may need to be maintained to allow passage of the heavy equipment required for scheduled maintenance work. Access roads cannot deviate from the approved and permitted access plans. Maintenance of these roads may include adding clean gravel or clean crushed stone to fill depressions and eroded areas. This activity shall be conducted only within the width of the existing access road footprint and does not include widening existing access roads

If gravel begins to migrate onto the existing vegetated road shoulder, this gravel shall be removed during the project and/or after the completion of use of the road to ensure the road fill is not spreading into adjacent resource areas, or resulting in the road becoming much wider than its pre-existing or permitted condition. In some areas of mapped rare species habitat or other sensitive areas where project-specific permit conditions require the prevention of the migration of sediments into adjacent resources, an engineered stabilization system (e.g., GeoWeb or similar) may be suitable to prevent sedimentation while allowing for unrestricted wildlife migration.

In Massachusetts, any proposed widening of access roads in turtle Priority Habitat would require individual consultation with NHESP and, depending on the level of impact proposed, may require a Project Review filing. The limited filling of ruts or potholes is compatible with the National Grid Operation and Maintenance Plan approved by NHESP under the Massachusetts Endangered Species Act, however, severely rutted access roads in turtle Priority Habitat that require extensive linear feet of stone for safe passage will require individual consultation with NHESP.

[2] Depending on the road, use of an asphalt binder or asphalt millings as a construction entrance/exit may trigger state or local permit requirements.

Major reconstruction projects may require multiple permits. In all cases, the fill to be used for existing access roads shall be clean and free of construction debris, trash or woody debris. Use of processed gravel may be approved by the Person-In-Charge and the National Grid Environmental Scientist, on a case-by-case basis. If clean stone is used then addition of more erosion controls may not be necessary.

4.5 Maintenance of Existing Culverts

Damaged culverts may not be repaired or replaced without consulting with the National Grid Environmental Scientist to determine if a permit is required. For functioning culverts, care shall be taken to protect adjacent wetlands and watercourses by installing appropriate sedimentation and erosion controls around the downstream end of the culvert. Culverts shall be repaired/replaced in kind and shall not be changed in size unless approval has been obtained from the National Grid Environmental Scientist. In-kind replacement is replacement using the same material, functional inverts, diameter and length as the existing culvert. Changes to any of these characteristics shall require permitting. Installation of any **new** culvert is not allowed without obtaining all necessary permits first. Refer to BMPs in **Appendix 4**.

If, at the time of anticipated replacement, there is heavy flow through the culvert, the Person-In-Charge shall consult with the National Grid Environmental Scientist, to verify whether the culvert shall be replaced at that time. Water may need to be temporarily diverted during culvert repair/replacement. There typically are seasonal restrictions limiting both the replacement of existing culverts as well as installation of new culverts to the low-flow period. The low-flow period can vary from state to state. If any unexpected conditions are encountered during culvert replacement, the National Grid Environmental Scientist shall be contacted immediately prior to the work being completed for additional consultation.

4.6 Temporary Construction Access over Drainage Ditch or Swale

In some situations, construction access from paved roads onto ROWs may require the crossing of drainage ditches or swales along the road shoulder. In these situations, the installation of construction mats, mat bridges or temporary culverts may facilitate construction access over the ditches or swales. These culverts shall be temporary only, sized for peak flow, and shall be removed after construction is complete. Consult with the National Grid Environmental Scientist prior to installation. In addition, if access over existing culverts may require extending the culvert, consult with the National Grid Environmental Scientist. Refer to BMPs in **Appendix 4**.

4.7 Construction Material along ROW

After preparing a site by clearing and/or installing any necessary erosion and sediment controls and prior to the start of construction, material such as poles, cross-arms, cable, insulators, stone and other engineered backfill materials may be placed along the ROW, as part of the project. The stockpiling of stone and other unconsolidated material on construction mats shall be avoided, if determined necessary due to access and work pad constraints, the material must be placed on a geotextile fabric and be properly contained with a sedimentation barrier such as straw wattle. No construction material shall be placed in wetlands or other sensitive resource areas unless authorized by the National Grid Environmental Scientist or Project Environmental Consultant.

5.0 Winter Conditions

5.1 Snow Management

Refer to **Appendix 6** for the current Snow Disposal Guidelines.

5.2 De-Icing

Where allowed, calcium chloride is preferred as a de-icing agent when applied according to manufacturer's guidelines in upland areas. Sand shall be used on construction mats through wetland areas.

Consult with the National Grid Environmental Scientist on de-icing agents when working in a facility or substation close to resource areas. Many municipalities have specific requirements for de-icing agents allowed within 100 feet of wetland resources and other sensitive areas.

5.3 Snow and Ice Management on Construction Mats

Proper snow removal on construction mats shall avoid the formation of ice. To avoid the formation of ice, snow shall be removed from construction mats before applying sand. Prior to their removal from wetlands, sand shall be collected from the construction mats and disposed of in an upland area. A round street sweeping brush mounted on the front of a truck may be an effective way to remove snow from construction mats. Propane heaters may also be suitable solutions for snow removal and/or de-icing of construction mats.

Once construction mats are removed, wetlands shall be inspected for build up of sand that may have fallen through construction mats. Care shall be taken to inspect wetland crossings as each mat is removed to ensure sand is properly removed and disposed of off-site.

6.0 Construction Mats

The use of construction mats allows for heavy equipment access within wetland areas. The use of construction mats minimizes the need to remove vegetation beneath the access way and helps to reduce the degree of soil disturbance and rutting in soft wetland soils. Construction mats most often used by National Grid are wooden timbers bolted together typically into 4-ft by 16-ft sections, wooden lattice mats, or composite mats. In some cases, construction mats or other mats are used for staging or access in upland areas based on site conditions (e.g., agricultural field access). Refer to BMPs in **Appendix 4**.

Typically construction mats may be installed on top of the existing vegetation, however in some instances cutting large woody vegetation may be required. Check with National Grid Environmental Scientist prior to cutting or clearing vegetation for construction mat placement.

Where an extended period of time has lapsed since wetland delineation and start of construction, and new vegetative growth has concealed wetland flagging or flagging is simply no longer obviously visible, wetland boundaries should be re-flagged where necessary prior to the installation of matting.

Follow the approved plans in the EFI for construction mat installation and do not deviate from the plans. **Any deviation from the approved plans needs to be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting, require stopping the project or result in a permit violation or revocation.**

6.1 Construction Mats and Mowing

Close coordination with the mowing contractor shall be required to ensure that access plans are followed, and construction mats are utilized when necessary. Sometimes mowing contractors may have to work off the leading edge of a construction mat to mow in order to lay the next construction mat and continue further into the wetland. Under no circumstances shall trees or shrubs be allowed to be pulled out of the wetland by the root ball. The root ball of trees and shrubs shall remain intact. Chipping debris and excessive amounts of slash shall not be placed in wetlands or other resource areas. In some instances, it may be beneficial to pile a reasonable amount of slash within a nearby upland area to create habitat for wildlife. This activity shall be approved by the National Grid Environmental Scientist.

6.2 Stream Crossings and Stream Bank Stabilization

Stream crossings shall be bridged with construction mats or other temporary minimally-intrusive measures unless fording is acceptable for the site and is authorized by the National Grid Environmental Scientist. Care shall be taken when installing a construction mat bridge to insure that the stream bed and banks are not damaged during installation and removal and that stream flow is not unduly restricted. Where stream width allows, construction mats shall be installed to span the watercourse in its entirety without stringer placement in the water or any restriction of stream flow. Environmental permits may be required to cross or disturb protected waters, depending upon state-specific regulatory requirements. Refer to BMPs in **Appendix 4**. Immediately following construction mat removal, all stream banks shall be stabilized and restored to prevent sedimentation and erosion.

6.3 Cleaning of Construction Mats

Mats shall be certified clean by the vendor prior to installation. The vendor shall use the certification form provided as **Appendix 5** to document compliance. Clean is defined as being free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site. Any equipment or timber mats that have been placed or used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project site to prevent the spread of invasive species from one area to another[3]. **Mats shall be cleaned prior to being removed at the completion of the project: exceptions to this requirement**

[3] On ROW projects where multiple wetlands may be dominated by the same invasive species, cleaning may not be required for movement along the ROW. Check with the National Grid Environmental scientist for guidance.

may be made on a case-by-case basis. Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of construction mats.

6.4 Stone Removal for Construction Mat Placement

For situations where the matting contractor determines that stones or boulders must be removed or relocated within wetland areas in order to install safe and level structure work pads or access roads the boulders shall be moved in a manner which does not result in significant soil disturbance (i.e., pushing with a bull dozer is not allowed). The boulders shall not be placed on any existing vegetated areas within wetlands or within vernal pools. When numerous boulders shall be removed from a wetland area, they shall be deposited in an upland area outside of the flagged wetland limits, outside of any cultural resource areas and outside of any RTE species populations. Any boulders that shall be placed within buffers (In MA, the 100-foot buffer zone, and in RI, the 50-foot Perimeter Wetland, 100-foot or 200-foot Riverbank Wetlands) shall be placed to avoid causing soil disturbance and they shall be within an approved limit of work. When there is a significant number of boulders that need to be removed, the National Grid Environmental Scientist shall be consulted for guidance.

6.5 Transition onto Mats

Erosion controls and stone or wood chip ramps shall be installed to promote a smooth transition to and minimize sediment tracking onto construction mats. Geotextile may be added beneath stone or wood chip transitions to facilitate removal, as necessitated by site or permit conditions. Mat transitions shall be removed once construction mats have been removed and during restoration. Refer to BMPs in **Appendix 4**.

6.6 Construction Material on Mats

The stockpiling of stone, drill spoils and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Additional controls, such as watertight mud boxes and geotextile/filter fabric over or between construction mats shall be considered for stockpile management. If material is placed on construction mats and falls through into wetlands, the material must be removed by hand. Saturated soils shall be allowed to dewater prior to off-site transport for sufficient time to ensure that water/sediment is not deposited onto construction mats or public roads during transport. Heavy machinery shall not be left overnight on mats located within floodplain unless approved by the National Grid Environmental Scientist, the machinery is still in use, and removal of the equipment requires the use of additional equipment to move it and would increase vehicle trips in/ou of wetlands. In these situations and when approved by the National Grid Environmental Scientist, the equipment shall be secured against vandalism and secondary containment measures shall be employed where feasible. Mat anchoring shall be evaluated, see below.

6.7 Mat Anchoring

The National Grid Environmental Scientist and Project environmental consultant shall indicate to the project team when mat anchoring may or shall be necessary. The matting contractor will propose the method of mat anchoring, which will be approved by the National Grid Environmental Scientist and the

National Grid Construction Supervisor. The need for anchoring should be noted in the project EFI, on the project access and matting plans, and in the scope of the bid document (if externally sourced).

Anchoring of construction mats should be considered when any of the following conditions are presented at a project work location:

Location	Considerations
Stream crossings Shorelines of Ponds/Lakes Wetlands Floodplains	When located in a mapped flood area (A). When mapped 100-year flood elevations (AE) are greater than 2 ft above existing grades. Where past flash flood events have occurred. Where steep terrain is present or surrounds the project location. When mats will be in place during hurricane season for greater than 2 weeks.
Tidal areas	When located in a Velocity (V or VE) Zone. When mats will be in place during a moon tide cycle. When mats will be in place during hurricane season for greater than 2 weeks.

Examples of mat anchoring are provided below, but the implementation methods for anchoring mats are not limited to these examples. Where anchoring is determined to be necessary, the matting contractor should propose a method suitable based on field conditions and that takes crew safety, slip/trip/fall hazards, size of matting footprint, and other project and site-specific factors into consideration. Refer to BMPs in **Appendix 4**.

Limited sets of mats

- Cable or rope in chain pockets and run linearly, or
- Linear ropes anchored using helical screws, manta ray anchors, or posts.

Larger sets of mats or those without chain pockets

- Chain link fence posts or other posts driven in along mat edge every 3-4 feet and ropes then laced across mats between opposing posts before storm event, or
- Anchor bolts added to mats, then cable is laced between bolts and tied to helical or manta ray anchor.

6.8 Corduroy Roads

Corduroy roads are a wetland crossing method where logs are cut from the immediate area and used as a road bed to prevent rutting from equipment crossing. This technique is designed to be used in areas of wetland crossings where there is no defined channel or stream flow and should never be used in streams. Corduroy logs shall be placed in the narrowest area practicable for crossing with the logs

placed perpendicular to the direction of travel across wet area. The use of corduroy logs shall only be in emergencies when approved by the National Grid Environmental Scientist or when they have been specifically permitted as part of a project. Refer to BMPs in **Appendix 4**.

6.9 Construction Mat Removal

Once construction mats are removed, wetlands shall be inspected for build up of sand or other materials that may have fallen through construction mats. Care shall be taken to inspect wetland crossings as each mat is removed to ensure any materials are properly removed and disposed of off-site.

6.10 Utility Air Bridging

In ROWs where other utility facilities (including but not limited to gas, oil, fiber optic, electric, water, and sewer) are co-located within the transmission ROW, bridging may be required to cross those facilities. The project team shall coordinate with the respective utility company prior to determining if bridging or permanent crossings are required.

7.0 LGP Equipment Use

Only when approved by the National Grid Environmental Scientist on a case-by-case basis shall equipment with a LGP **psi that meets the state-specific USACE General Permit requirement when loaded** be allowed to access through wetlands. Refer to the state-specific General Permit for the definition of LGP in each state at: http://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/, or to the summary table provided below. The National Grid Environmental Scientist's approval of the use of LGP equipment through wetlands depends on several criteria including:

- Time of year. LGP equipment use may be allowed if weather and field conditions at the time of construction are suitable to eliminate/minimize the concern of rutting or other impacts. Frozen, frozen snow pack, low flow, drought conditions, or unsaturated surface soil conditions are typically acceptable conditions. Spring and fall construction, due to the typical higher precipitation, are not suitable times of year for LGP equipment use.
- Number of trips. Multiple trips through a wetland have shown to increase the potential for damage and require matting. LGP equipment use shall likely only be approved if trips are limited to one trip in and one trip out.
- Type of wetland system. Some wetlands have harder soils/substrate, and may be passable without causing significant damage. Some of the wetlands along National Grid ROWs have existing hard bottom roads that have been vegetated over time and may be traversed with LGP equipment without construction mats.
- Emergencies. LGP equipment use may be allowed during emergency or storm conditions for outage restoration.
- State-specific USACE General Permit Performance Standards. The standard is for no impact to the wetland, which may be obtained by using LGP equipment **when loaded**). "*Where construction requires heavy equipment operation in wetlands, the equipment shall either have low ground*

pressure (as specified in the USACE GP), or shall not be located directly on wetland soils and vegetation; it shall be placed on construction mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation."

- Local bylaws. Municipal wetland bylaws, where applicable, shall be reviewed for prohibitive conditions or applicable performance standards.

LGP equipment is prohibited in the following resources areas:

- Stream crossings
- State listed-species habitat
- Outstanding Resource Waters (ORWs)
- Vernal pools
- Archaeological sensitive areas

Where LGP equipment use is desired in lieu of construction mats, the construction supervisor should identify these areas on marked-up access plans. A site visit with the Project Environmental Monitor should be scheduled to assess if the proposed locations are potential candidates. The Project Environmental Monitor will document potentially suitable locations and dismiss others as unsuitable.

ACOE New England District General Permit Requirements

State	Restrictions	Maximum PSI (when loaded) for Use without Mats	Reference
MA	*One of the following must apply:* Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Equipment must be operated on adequately dry or frozen conditions such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands.	3 psi	MA General Permit, General Condition 13
NH	*One of the following must apply:* Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands.	4 psi	NH General Permit, General Condition 17
VT	*One of the following must apply:* Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. Note: Written authorization from the Corps required to waive the use of mats during frozen or dry conditions.	3 psi	Vermont General Permit, General Condition 14
RI	*One of the following must apply:* Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands.	6 psi	Rhode Island General Permit, General Condition 15

State	Restrictions	Maximum PSI (when loaded) for Use without Mats	Reference
	Note: Written authorization from the Corps required to waive the use of mats during frozen or dry conditions.		

Due to the fact that ground conditions may change between the time of the evaluation and construction, LGP equipment approval is required **at the time of construction for each wetland crossing** and shall be dependent upon the above conditions. In addition, LGP equipment use and approval shall be assessed by the National Grid Environmental Scientist or Project Environmental Monitor during construction on a continuing basis

Once a location is approved for the use of LGP equipment:

- The Construction Supervisor must check-in with the Project Environmental Monitor at least two weeks before construction begins to ensure conditions remain suitable for LGP equipment use, and weather conditions are favorable.
- The Project Environmental Monitor must observe the equipment when in use.
- LGP equipment use shall cease immediately if field conditions are found to be unsuitable (i.e. soil rutting greater than six inches or the destruction of vegetation root systems beyond the capacity of natural revegetation).
- **If wetlands damage occurs, the use of the LGP equipment shall be suspended, and the wetlands be restored.**
- Any LGP equipment used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project site to prevent the spread of invasive species from one area to another.

8.0 Soil Disturbing Activities

8.1 Dust Control

Cutting activities shall be conducted to minimize the impacts of dust on the surrounding areas. Dust suppression is an important consideration. Water or other National Grid approved equivalent in accordance with the manufacturer's guidelines may be used for dust control along ROWs in upland areas. During application of water for dust control, care shall be taken to ensure that water does not create run-off or erosion issues. Refer to BMPs in **Appendix 4.**

8.2 Clearing

Clearing is not allowed without specific permission as it constitutes soil disturbance under several regulatory programs and may trigger permitting by increasing the project's footprint of disturbance. If clearing is required for a project, the limit of clearing shall be established with flagging or construction

fencing and/or erosion controls. Clearing shall be done in accordance with project specific permits. Following the completion of clearing, the limits of work shall be re-established. Refer to BMPs in **Appendix 4**.

8.3 Grubbing

Grubbing is not allowed without specific permission as it constitutes soil disturbance under several regulatory programs and likely triggers permitting by increasing the project's footprint of disturbance. If grubbing is required for a project, the limit of grubbing shall be re-established after clearing has been completed. The area of grubbing shall be identified with flagging or construction fencing and/or erosion controls. Grubbing shall be conducted in accordance with project-specific permits.

8.4 Blasting, Noise and Vibration Control

If blasting is anticipated, the project team, including the National Grid Environmental Scientist, shall be consulted. If possible, plan work in residential areas to avoid noisy activities at night, weekends or during evenings. Emergency work in residential areas should be carried out in such a way as to keep noise to a minimum at night and weekends. Equipment should be maintained as per the manufacturer's guidance to minimize noise and vibration.

Work plans must consider local noise ordinances and provide specific controls to ensure noise levels are maintained within specified limitations.

8.5 Site Grading

The work site shall not be graded other than in accordance with project permits. Any proposed grading shall be reviewed by the National Grid Environmental Scientist for wetlands, rare species habitat, areas of cultural and historical significance, and other environmentally sensitive areas prior to start of work. In some cases, additional testing for cultural or historical resources may be triggered by proposed grading; alternatives to grading may be sought due to protracted time frame of obtaining the permit associated with testing and performing the testing. Grading outside of a regulated area shall be kept to the minimum extent necessary for safe and efficient operations and shall comply with the project permit plans.

Grading shall be performed in a manner which does not increase the erosion potential at the Site (e.g., terraces or slope interruptions shall be utilized). Graded sites shall be promptly stabilized by applying a National Grid approved seed mix (if adequate root and seed stock are absent), and mulching with hay, straw or cellulose (use straw or cellulose hydromulch where the potential introduction of invasive plant species is of concern) to reduce erosion and visual impact, as soon as possible following completion of work at the site. Grading within a regulated area shall be subject to the review and approval of the National Grid Environmental Scientist.

In some municipalities, site grading activities require the prior approval of the Town Engineer, Building and Zoning Official, or Public Works Director. Local ordinances or bylaws should be reviewed for applicable restrictions and permitting thresholds

8.6 Grounding Wells

The installation of grounding wells shall require erosion controls and proper soil management. Due to the typical depth required for grounding wells (typically 50 to 200 feet or more), erosion controls shall be installed around the proposed well location when working in buffer zone, in proximity to sensitive resources or near slopes. Also, dewatering basins may be required for the proper management of groundwater. The National Grid Environmental Scientist shall be consulted for the disposal of any excess soil.

8.7 Counterpoise and Cathodic Protection

The installation of counterpoise or cathodic protection shall require erosion controls and proper soil management. The National Grid Environmental Scientist shall be consulted for the disposal of any excess soil.

8.8 Work Pads

When work pads are being constructed, only clean material shall be used in their construction. Work pads shall only be constructed in areas approved by the National Grid Environmental Scientist and shown on the approved permit access plans.

8.9 Site Staging and Parking

During the project planning and permitting process, locations shall be identified for designated crew parking areas, material storage, and staging areas. Where possible, these areas should be located outside of buffer zones, watershed protection areas, and other environmentally sensitive areas. Any proposed locations shall be evaluated for all sensitive receptors and for new projects requiring permitting, shall be incorporated onto permitting and access plans.

8.10 Soil Stockpiling

Soil stockpiles shall be located in upland areas and, if in close proximity to wetlands and wetland buffers, shall be enclosed by staked straw bales or another erosion control barrier. The stockpiling of stone, drill spoils and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Additional controls, such as watertight mud boxes and geotextile/filter fabric over or between construction mats shall be considered for stockpile management. If material is placed on construction mats and falls through into wetlands, the material must be removed by hand. Saturated soils shall be allowed to dewater prior to off-site transport for sufficient time to ensure that water/sediment is not deposited onto construction mats or public roads during transport.

8.11 Top Soil/High Organic Content Soil

When the work site requires excavation and grading, the top soil shall be stockpiled separately from the material excavated. This top soil shall be spread as a top dressing over the disturbed area during restoration of the site.

In some instances where work is occurring within wetlands, high organic content soil may be displaced. Such high organic content soil shall be segregated from other excavated materials and stockpiled for

use in wetland restoration areas. Care shall be taken to minimize the handling of high organic content soil. Preferably, the soil shall be stockpiled in one location until it is moved to the restoration area.

9.0 Stone Wall Dismantling and Re-building

Removal or alteration of stonewalls shall be avoided, whenever possible. As appropriate, some stonewalls removed or breached by construction activities shall be repaired or rebuilt. Rebuilt stone walls shall be placed on the same alignment that existed prior to temporary removal, to the extent that it shall not interfere with operations. The removal and rebuilding of stone walls requires approval from the National Grid Environmental Scientist and Property Legal, and may require several weeks lead time for coordination. Note that not all states allow this technique and that dismantling may not be allowed at all due to quality or significance of the wall. Once a stone wall has been identified as requiring dismantling, the following procedures shall be followed:

- Identify stone wall that is required to be temporarily dismantled and notify project team that a site visit is warranted to review the stone wall.
- The National Grid Environmental Scientist, with support from Property Legal and/or cultural/historical consultant, shall determine if permitting or additional permissions are required prior to dismantling stone wall.
- Once permit or permissions have been received, full documentation of wall dimensions (measurements and photographs) shall be submitted to the National Grid Environmental Scientist. Documentation of the wall dimensions shall be marked onto a copy of the applicable EFI access plan (or equivalent plan) with a useful reference for future locating such as GPS coordinates and/or measurement from a permanent reference point (closest structure location or closest cross street, etc.). The wall shall be photographed from all sides with a written description of the photograph (i.e. southern side of wall looking north). In addition, documentation of the length of wall to be dismantled shall be recorded. Take special care to note if granite property bounds (or other marker) are located within the wall so additional survey can be accomplished prior to dismantling in cases where the stone wall represents a property boundary. Site visits by project team (which shall include the National Grid Environmental Scientist) are a mandatory requirement prior to dismantling.
- No dismantling shall take place until documentation has been submitted to the National Grid Environmental Scientist and approved as sufficient documentation.
- Stones from the wall shall be removed from the work area and temporarily stored in nearby location, away from wetlands; buffer zones; rare species habitat and other historical/archeological concerns.
- Avoid dismantling via the “bulldozer” method when possible as this method makes it nearly impossible to rebuild the wall in the same alignment due to its uncontrolled nature. Dismantling shall be conducted either by hand, with stones stacked as they are removed, or on less “sensitive” walls to use an excavator with a thumb to grab each stone and build a stockpile. Significant ground disturbance below the wall shall be avoided.

- Once construction and access in the area has been completed, the wall shall be rebuilt to pre-dismantled conditions or better. If rebuilding a stone wall can not be placed on the same alignment that existed prior to temporary removal, approval from the National Grid Environmental Scientist and Property Legal is required. **Note that if the wall represents a legal property boundary or is historically or culturally significant (or was previously determined to be in a very high quality condition), a professional stone masonry company may be required to document wall alignment, and conduct the dismantling and rebuilding.**

10.0 Avian Nest Removal

Avian nest removal shall be done in accordance with EG-304. Consult the National Grid Environmental Scientist prior to removing any nests. There are seasonal restrictions of the removal of avian nests and federal or state permits may be necessary prior to removal.

11.0 Drilling Fluids and Additives

When installing subsurface structures, there may be a need to utilize drilling aids such as slurries, borehole sealants, and other additives. All necessary steps shall be taken by National Grid personnel and contractors to prevent potential adverse effects on drinking water aquifers, groundwater quality, and wetlands when utilizing drilling aids. Efforts should be made to utilize natural bentonite clay-type materials, in place of polymer-based drilling aids. Regardless of the specific product type, the following requirements shall be met:

- Drilling aids must be NSF certified and manufactured to NSF-ANSI 60 standards. https://www.nsf.org/newsroom_pdf/NSF-ANSI_60_watemarked.pdf
- Product use must be in accordance with manufacturer's specifications and instructions.
- National Grid personnel or their contractor shall provide all the necessary information regarding the proposed product to be used to National Grid's Environmental Sustainability, Compliance and Licensing & Permitting Department as early as possible in the project planning phase. If the work is being performed by a contractor, this information must be included as part of their initial bid package.
- If polymer-based products are proposed for use, product information shall be included in all related environmental regulatory filings and frac-out plans, if possible.
- A qualified individual shall be designated who will confirm/verify and document the specific use of a drilling aid at each location. This will include add-mix ratios, surface area treated, volume of water within excavation, volumes/weight of additives used, and any other measurements specified by the manufacturer. No mixing will be allowed in the drilled shaft excavation.
- The Contractor or National Grid crew performing the work is responsible for neutralizing all drilling products, as applicable, in accordance with the manufacturer's specifications. This shall be performed following removal from the excavation and while held in holding tanks. A

qualified person shall be designated by the Contractor who will confirm/verify and document the appropriate neutralization activity at each location, as necessary.

- Waste drilling aids (neutralized or not) or soils that may have come into contact with drilling aids will not be disposed of on National Grid properties, discharged to any ground surface or subsurface, waterbodies, wetlands or placed on 3rd party properties.
- All product use must be completed in strict adherence with the management, storage, mixing, transporting, disposing and any other requirements of state and federal regulatory approvals and permits, as applicable.
- Relevant documentation shall be maintained by the Contractor or National Grid crew performing the work, and shall include volume of material treated and disposed and the location/facility at which it was disposed.
- National Grid will not be identified as the disposal generator for any polymer based slurry waste or additives generated by Contractor activities.
- The Contractor or National Grid crew performing the work assumes full responsibility for the safe storage of all polymers and additives during use and also assumes full responsibility for improper use and application of said polymers and additives that are deemed to have contravened aquifer and/or groundwater quality.
- National Grid reserves the right to refuse and terminate the use of any specific drilling aid at any time.

Regardless of the type of drilling aid utilized, the Contractor or National Grid crew performing the work is responsible for properly treating, containerizing, testing, transporting and disposing of any/all fluids and solids generated during their activities. All wastes must be disposed of in accordance with federal and state regulations. Relevant documentation shall be maintained and shall include volume of material treated and disposed and the location/facility at which it was disposed.

12.0 Water Withdrawal for Geotechnical Investigations

The use of water during geotechnical drilling operations may be required, and is most common during the “drive and wash” drilling technique, where 4- or 6-inch diameter casing is driven into the ground, and the soil inside the casing is washed out using a pump and hollow rods. Soil samples are generally collected at periodic intervals using a split spoon sampler (e.g., every 5 vertical feet).

The National Grid Environmental Scientist and/or Project Environmental Monitor may approve withdrawals from wetlands and waterways on a case-by-case basis should the geotechnical team advise no other options are available. Generally, the amount of water required for withdrawal is between 100 and 200 gallons, and the water is then recycled continuously in the drilling process. Certain scenarios may require additional water usage if water is lost down the boring (e.g., lost due to bedrock fractures during rock coring). The following general guidance should be adhered to when determining whether water withdrawals may be allowed during geotechnical investigations on the ROW. Approval from the National Grid Environmental Scientist and/or Project Environmental Monitor is required prior to initiating water withdrawals during geotechnical investigations.

- Withdrawals from perennial streams, ponds, lakes and large wetlands systems are preferred over small isolated wetlands to ensure the water level, water table, and hydroperiod are not affected. Prior to start of work, the Contractor shall identify which water source they prefer to withdraw from. The National Grid Environmental Scientist and/or the Project Environmental Monitor will confirm whether these sources are appropriate.
- Care should be taken to avoid alteration of wetlands or the beds and banks of surface waters. Examples of alterations include, but are not limited to, the following:

  (a) the changing of pre-existing drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns and flood retention areas;

  (b) the lowering of the water level or water table;

  (c) the destruction of vegetation; and

  (d) the changing of water temperature, biochemical oxygen demand (BOD), and other physical, biological or chemical characteristics of receiving waters.
- Wetlands and waterways providing habitat for rare species should be avoided unless all other options are exhausted. Under no circumstances should water be withdrawn from a Vernal Pool.
- Withdrawal pipes or stingers should be elevated off the bottom of wetlands and streams during the duration of pumping. Additionally, fabric or screening should be covering the withdrawal pipes to eliminate inadvertent harm to wildlife.
- Withdrawals should be performed in a manner that does not damage vegetation, disturb sediment, or result in the release of temporary or permanent fill material (e.g., sediment, spoils, or turbid water) into the wetland/waterway. Additional detail from geotechnical experts may be required to solidify BMP recommendations.
- Any water used for geotechnical drilling operations (including water withdrawn from surface water, brought on-site, or from other sources) shall be discharged into the open borehole or to an upland area such that the water infiltrates to the ground and is not discharged to a wetland or surface water resource area. Consultation with the National Grid Environmental Scientist and/or the Project Environmental Monitor is required if this is not feasible. At no time should water withdrawals result in a temporary or permanent fill/discharge of material (e.g. sediment, spoils, or turbid water) into the wetland or waterway.
- If water sourcing options is not determined prior to mobilization, necessary water shall be brought in by tank truck. Should withdrawal from surface water sources become necessary during soil boring work, the National Grid Environmental Scientist and/or the Project Environmental Monitor shall be notified prior to beginning withdrawal. If initial withdrawal from surface water is approved by the National Grid Environmental Scientist and/or the Project Environmental Monitor, the driller may withdraw from the surface water, as long as the above criteria are met.
- If excessive water withdrawal is necessary, the National Grid Environmental Scientist and/or the Project Environmental Monitor shall be consulted to determine whether the water source is appropriate for withdrawal.
- In New Hampshire, withdrawals made from state-owned property require written permission from

the agency with primary responsibility for monitoring and/or maintaining the site.

13.0 Gates

When not in use, gates shall be locked with a company-approved lock or double locked with the property owner's lock. New gates may be installed during a project, however, installation of a gate requires permission from the property owner, and may require environmental permitting. Consult with National Grid Real Estate and the National Grid Environmental Scientist prior to installing a new gate, as well as with the appropriate engineering department for the current company gate specifications. Refer to BMPs in **Appendix 4**. Installation of ROW access restrictions (e.g., stone, bollards, other) at road crossings also require consultation with the National Grid Environmental Scientist and Property Legal.

14.0 Signage

Specific signage may be required by permits or be specified in the EFI to limit access in certain sensitive areas. Signs shall be used to clarify allowed access and sensitive areas, such as:

- "No snow stockpiling beyond this point";
- "Approved access (to structures A-F)";
- "Do not cross this area until construction mats are in place";
- "No vehicle crossing";
- "Areas to avoid"; and
- "Environmentally Sensitive Area – Keep Out."

Signs shall be used in conjunction with snow fencing or other physical barriers as demarcation for sensitive areas (e.g., rare species areas, sensitive archeological locations, etc.) that need to be protected and avoided by construction activities. In addition, permit signs required by the regulatory agencies shall be present (i.e. MADEP, RIDEM, EPA (SWPPP), ACOE, etc) at construction sites and/or ROW access points. Construction signage shall be installed and maintained by the contractor performing the work during the project. Absence of signage does not eliminate the need to comply with access plans, permit conditions, and other regulatory requirements. Refer to BMPs in **Appendix 4**.

15.0 Refueling and Maintenance Operations

15.1 Spill Prevention and Response Plan

Spill controls shall be provided on every field vehicle. Bulk storage of fuels (55 gallons or greater) shall be approved by the National Grid Environmental Scientist prior to being brought on site. The need for a field spill plan shall be evaluated specific to the project for regulatory requirements under SPCC regulations or local ordinances. A field spill plan would include information on fuels and oils being used, approximate amounts in each container or type of equipment, location, fueling location, secondary containment, response and notification procedures, including contact phone numbers, etc. All

personnel shall be briefed on spill prevention and response prior to the commencement of construction. The state-specific EI-501 and EG-502 shall be followed in the event of a spill.

Typical construction activities do not require the use or storage of large quantities of oil or hazardous materials (i.e., greater than 55 gallons). However, oil and/or hazardous materials (OHM) may be required in limited quantities to support construction or vehicle operations. Best practices shall be followed in the use and storage of OHM which include but are not limited to: storage and refueling greater than 100 feet from resource areas; maintenance of spill response equipment at work locations sufficient to handle incidental releases from operating equipment; general training for on-site personnel for spill clean up response for incidental releases of OHM; and contracting with an on-call spill response contractor that is capable of managing incidental and significant releases of OHM. There may situations that additional precautions shall be required for the storage or use of OHM (i.e., within wellhead protection areas, GA/GAA areas, Zone IIs). Storage of OHM shall be done in accordance with any applicable regulatory requirements.

15.2 Field Refueling

Small equipment such as pumps and generators shall be placed in small swimming pools or on absorbent blankets/pads, to contain any accidental fuel spills. Small swimming pools with absorbent blankets/pads, and/or other secondary containment, shall be used for refueling of fixed equipment in wetlands and should be maintained to prevent accumulation of precipitation.

15.3 Grease, Oil, and Filter Changes

Routine vehicle maintenance shall not be conducted on project sites.

15.4 Other Field Maintenance Operations

When other vehicle or equipment maintenance operations (such as emergency repairs) occur, company personnel or contractors at field locations shall bring vehicles or equipment to an access location a minimum of 100 feet away from environmentally sensitive areas (e.g., wetlands or drinking water sources). A paved area, such as a parking lot or roadway, is a preferred field maintenance location to minimize the possibility of spills or releases to the environment.

Crews shall take all usual and reasonable environmental precautions during repair or maintenance operations. Occasionally, it is infeasible to move the affected vehicle or equipment from an environmentally sensitive area to a suitable access area. When this situation occurs, precautions shall be taken to prevent oil or hazardous material release to the environment. These precautions include (but are not limited to) deployment of portable basins or similar secondary containment devices, use of ground covers, such as plastic tarpaulins, and precautionary placement of floating booms on nearby surface water bodies.

15.5 Tools and Equipment

Cleaning of tools and equipment shall be conducted away from environmentally sensitive areas (such as wetlands, buffer zones or drinking water sources) to the maximum extent possible. A paved area such

as a parking lot or roadway is preferred, to minimize the possibility of spill or release to the environment. Crews shall wipe up all minor drips or spills of grease and oil at field locations.

16.0 Stabilization Deadlines for Projects Subject to EPA Construction General Permit

16.1 Deadlines to Initiate Stabilization Activities (Permanent and Temporary)

Soil stabilization measures shall be implemented immediately whenever earth-disturbing activities have permanently or temporarily ceased on any portion of the project. The following are some examples of activities that constitute initiation of stabilization:

- Preparing the soil for vegetative or non-vegetative stabilization;
- Applying mulch or other non-vegetative product to the exposed area;
- Seeding or planting the exposed area;
- Finalizing the arrangements to have stabilization product fully installed in compliance with the deadlines to complete stabilization in Section 15.2 below.

16.2 Deadlines to Complete Stabilization Activities (Permanent and Temporary)

As soon as practicable, but no later than 14 calendar days or 7 calendar days (for areas discharging to a sensitive water) after the initiation of soil stabilization measures commence the following should be completed:

- For vegetative stabilization, all activities necessary to initially seed or plant the area to be stabilized; and
- For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

16.3 Vegetative Stabilization (all except for arid, semi-arid, or on agricultural lands)

- Provide established uniform vegetation (e.g., evenly distributed without large bare areas), which provides 70% or more of the density of coverage that was provided by vegetation prior to commencing earth-disturbing activities. Avoid the use of invasive species as cover.
- For final stabilization, vegetative cover must be perennial; and
- Immediately after seeding or planting a disturbed area to be vegetatively stabilized, a non-vegetative erosion control must be implemented to the area while the vegetation is becoming established. Examples include; mulch and rolled erosion control products.

16.4 Vegetative Stabilization (Agricultural Lands)

- Disturbed areas on land used for agricultural purposes that are restored to their pre-construction agricultural use are not subject to vegetative stabilization standards.

16.5 Non-Vegetative Stabilization

If using non-vegetative controls to stabilize exposed portions of your site, or if you are using such controls to temporarily protect areas that are being vegetatively stabilized, you must provide effective

non-vegetative cover to stabilize any such exposed portions of the site. Examples of non-vegetative stabilization techniques include, but are not limited to, rip-rap, gabions, and geotextiles.

17.0 Clean-up and Restoration Standards

The following steps shall be taken once construction has been completed at each location along the ROW or within the project site. The following are minimum guidelines for clean-up and stabilization standards. Please refer to permit conditions for project-specific related standards. Refer to the EFI for applicable permit requirements and to determine if the site needs to be reviewed and approved by the permitting authorities prior to removal of erosion controls.

17.1 Removal of Sedimentation and Erosion Controls

After all work has been satisfactorily completed and vegetation has been re-established to a minimum of 75% cover, and upon approval by the National Grid Environmental Scientist, all non-biodegradable materials (e.g., siltation fencing, straw bale strings, stakes, straw wattle mesh casing, etc.) shall be disposed of properly off-site.

Dependent on permit requirements, sedimentation and erosion controls may not be allowed to be removed until after inspection and approval by one or more permitting authority. In most cases, removed straw bales may be used to mulch disturbed areas. Remaining straw bales that do not block the flow of water may be left in place unless they are required to be removed pursuant to permit conditions. Straw bales that block the flow of water shall be removed.

Prior to project construction being completed, the project team will develop post-construction inspection intervals to ensure timely removal of temporary BMPs. BMPs will be removed when the area is stabilized, which typically occurs when the area has either naturally stabilized (75% cover), or seed and mulch that was installed has achieved 75% cover.

17.2 In-Situ Restoration

Unless otherwise specified in permits or prescribed by the National Grid Environmental Scientist or the Project Environmental Consultant, all disturbed areas, including stream banks, wetlands and access routes, shall be restored following the completion of work. When the work is completed and construction mats have been removed, the National Grid Environmental Scientist or Project Environmental Consultant shall conduct an inspection. Wetlands shall be inspected for build up of sand or other materials that may have fallen through construction mats. Care shall be taken to inspect wetland crossings carefully after construction mat removal to ensure any materials are properly removed and disposed of off-site.

Restoration of Soil Compaction. If rutting or soil compaction following construction mat removal is observed, the area shall be returned to pre-existing conditions, and comparable to the surrounding area, by light hand raking or by back-blading with machinery. Restoration shall be overseen by the Project Environmental Consultant or National Grid Environmental Scientist. Deep ruts (>12”) shall be filled in using available, loose soil from the work area.

Seeding and Mulching. If adequate root and seed stock are absent and have been stripped from the area, graded sites shall be promptly stabilized by applying an approved seed mix and mulching with straw to reduce erosion and visual impact. Seeding and mulching shall be completed as soon as possible following completion of work at the site. For some wetland areas, natural re-vegetation may be more appropriate than seeding disturbed sites. Wetland areas where adequate root and seed stock are absent will be seeded using an approved wetland native seed mix. For some wetland areas, natural re-vegetation may be more appropriate than seeding disturbed sites. Refer to BMPs in **Appendix 4** for seed mix tables and mulch ratio tables.

If needed, the import of quality topsoil onto the ROW will be required. Topsoil should be tested, and approved by the Project Environmental Consultant or National Grid Environmental Scientist to determine its suitability for site conditions. Fertilizers will be approved on a case-by-case basis.

For upland areas, the disturbed vegetation and soil shall be restored and stabilized[4] by regrading the area to pre-existing conditions, if needed, seeding (if adequate root and seed stock are absent) and mulching the exposed soil, and removing strings and stakes from straw bales and using broken up straw bales for the mulch. Siltation fencing, strings and stakes shall be removed for disposal as ordinary waste. Refer to BMPs in **Appendix 4** for seed mix tables and mulch ratio tables.

For sites with excess boulders, additional boulders could be used at proposed and existing gate locations to use on either side of the gates as a deterrent for unauthorized vehicle access or be placed along the edges of work pads where steep slopes are present for safety purposes. The final placement of boulders should be reviewed prior to installation with Real Estate and the National Grid Environmental Scientist or Project Environmental Consultant.

Unless otherwise specified in Project-specific permit conditions, the National Grid Environmental Scientist or Project Environmental Consultant shall develop an inspection frequency to monitor restored areas for stabilization, germination and successful revegetation.

17.3 Invasive Species

All equipment shall be certified clean[5] utilizing the attached form (**Appendix 5**) or equivalent as approved by the vendor prior to mobilization to the work site. The vendor shall use the certification from provided as **Appendix 5** to document compliance with invasive species management BMPs. Clean is defined as being free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site. Any equipment that has been placed or used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project

[4] For projects subject to the 2012 CGP, stabilization is required within 14 days, or within 7 days for sensitive areas.

[5] The **Appendix 5** certification form (or equivalent as approved by National Grid Environmental Scientist) shall be used to document the clean certification

site to prevent the spread of invasive species from one area to another[6]. **Equipment shall be cleaned prior to being removed at the completion of the project: exceptions to this requirement shall be determined on a case-by-case basis.** Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of equipment.

17.4 Cleaning of Equipment

At the completion of the project, equipment shall be cleaned prior to being de-mobilized to prevent tracking of material onto roads and causing safety issues. Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of equipment.

17.5 Access Roads

Constructed gravel roads shall be left in place following project completion unless permit conditions require their removal. Refer to the specific permit conditions for these provisions. If the road is to be removed, the crushed stone and geotextile fabric shall be removed from the work site. Seeding and/or mulching of gravel roads is generally not required, unless necessary to prevent erosion. Pre-existing sandy soils within mapped rare turtle habitat shall not be seeded unless directed by the National Grid Environmental Scientist so as to not alter nesting habitat.

17.6 Stone Work Pads

Unless permit conditions or property owner's require the removal of constructed stone work pads following project completion, constructed work pads shall be left in place. Refer to the specific permit conditions for these provisions.

17.7 Construction Materials on ROWs

As soon as the structure work has been completed, all used parts and trash are to be picked up and removed from the project site. Retired poles shall be removed in accordance with National Grid Engineering Standard SP.06.01.301. In some cases, the used material from structure work may be temporarily stored at the work area by placing it out of the wetlands or other sensitive resource area until work in the adjacent areas has been completed. However, treated wood poles shall never be stored in standing water or in wetlands. If the project is cancelled, all material shall be removed from the project site. Excess material brought to the project site shall be removed upon project completion. Consult with the National Grid Environmental Scientist on whether the work site shall be restored in addition to the measures outlined above

17.8 Improved Areas

Yards, lawns, agricultural areas, and other improved areas shall be returned to a condition at least equal to that which existed at the start of the project. Off-ROW access shall never be assumed and shall be coordinated through Real Estate before being implemented. Depending on the access point, construction matting or other BMPs may be required to prevent ruts, lawn damage, or other property damage.

[6] On ROW projects where multiple wetlands may be dominated by the same invasive species, cleaning may not be required for movement along the ROW. Check with the National Grid Environmental Scientist for guidance.

Restoration following the completion of work and any use of improved areas shall be conducted in accordance with the measures outlined above.

17.9 Property Damage

All damage to property occurring as a result of a project shall be immediately repaired or replaced. In some locations, it may be desirable to document pre-existing damage prior to work commencing in that area in order to demonstrate afterwards that the damage did not result from the project. Work crews, the Project Environmental Consultant or the National Grid Environmental Scientist shall document repairs that were performed in response to damage from unauthorized vehicle use.

17.10 Overall Work Site

Upon satisfactory completion of work, the construction personnel shall remove all work-related trailers, buildings, rubbish, waste soil, temporary structures, and unused materials belonging to them or used under their direction during construction, or waste materials from previous construction and maintenance operations. All areas shall be left clean, without any litter or equipment (wire, pole butts, anchors, insulators, cross-arms, cardboard, coffee cups, water bottles, etc.) and restored to a stable condition and as near as possible to its original condition, where feasible. Debris and spent equipment shall be returned to the operating facility or contractor staging area for disposal or recycling (cardboard) as appropriate in accordance with EI-111.

17.11 Material Storage/Staging and Parking Areas

Upon completion of all work, all material storage yards, staging areas, and parking areas shall be completely cleared of all waste and debris. Unless otherwise directed or unless other arrangements have been made with an off ROW or off-property owner, material storage yards and staging areas shall be returned to the condition that existed prior to the installation of the material storage yard or staging area. Regardless of arrangements made with a landowner, all areas shall be restored to their pre-construction condition or better. Also any temporary structures erected by the construction personnel, including fences, shall be removed by the construction personnel and the area restored as near as possible to its original condition, including seeding and mulching as needed.

18.0 Notification of Emergency Work

Because it is sometimes difficult to identify wetlands and other sensitive environmental areas, the National Grid Environmental Scientist shall be notified within 24 hours or by the next working day whenever emergency off-road repair work takes place. Although the routine maintenance and emergency repair work is generally allowed, due to site conditions or the scope of the project, notification to the regulating agencies may be required.

19.0 Appendices

APPENDIX 1: Glossary
APPENDIX 2: Acronyms

APPENDIX 3:	Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection / Monitoring Report Form
APPENDIX 4:	BMP Drawings and Guidelines
APPENDIX 5:	Certification Sheet for Invasive Species Control
APPENDIX 6:	Snow Disposal Guidelines

Appendix 1 – Glossary

Access Road – An existing, periodically maintained road often consisting of gravel and/or exposed soils or vegetated with grasses but devoid of woody vegetation, that is visible on aerial photography and shown on ROW T-sheets. May include newly permitted permanent roads (i.e., roads to be constructed in accordance with a project-specific permit).

Access Route - A pathway previously used or proposed to be used by crews for access along the ROW. Routes may be shown on ROW T-sheets or previous project access plans but are not improved as maintained gravel/exposed soil roads. Access routes may be mown and can consist of trails utilized by recreational vehicles.

Action Logs – Project-specific log used to document action items required for permit compliance. The log identifies timeframes for completion and responsible parties. The log is typically updated by the Project Environmental Consultant or the National Grid Environment Scientist and circulated to the project team on a weekly, or more frequent, basis.

Bank – The transitional slope immediately adjacent to the edge of a surface water body, the upper limit of which is usually defined by a break in slope, or, for a wetland, where a line delineated in accordance with applicable state and federal regulations that indicates a change from wetland to upland.

BMP – Best Management Practice. Individual engineered constructions or operating procedures intended to minimize and mitigate soil disturbance, erosion, sedimentation, turbid discharges, and/or impacts to sensitive receptors.

Clean - Free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site.

Clean Gravel – Gravel is a type of coarse-grained soil that consists of small stones and other mineral particles. Clean Gravel shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001) Clean Gravel will not have fine materials that could lead to a turbid discharge.

Clean Stone (Crushed Stone) – Clean Stone (Crushed Stone) shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001). Clean Stone will not have fine materials that could lead to a turbid discharge.

Clearing – The cutting of trees and large bushes by hand and/or mechanical means.

Compost Socks – Tubular devices comprised of non-degradable, photodegradable, or biodegradable mesh tubing containing organic compost matrix. Compost socks are effective for intercepting site runoff, trapping

sediment, and treating for soluble pollutants by filtering stormwater runoff. . Compost socks are a useful sedimentation control device along construction site perimeters, as check dams in drainage channels, as a slope interruption practice on long and/or steep slopes, and around drain or street curb inlets.

Construction Mats - **C**onstruction, swamp, and timber mats ("construction mats") are generic terms used to describe structures that distribute equipment weight to minimize disturbance to wetland soil and vegetation while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes.

Corduroy Road – Corduroy roads are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another.

Dewatering Basin – An established containment area for saturated materials and pumped discharges. This measure is used for the purpose of de-watering soils prior to transport off site or for use in another location on site, and for allowing suspended sediment to settle out of pumped discharges.

Detention/Retention Basin – A detention/retention basin is designed for the purpose of detaining or retaining water. A dewatering basin is a form of detention basin

Dewatering – Use of a system of pumps, pipes and temporary holding dams to drain or divert waterways or wetlands, or lower the groundwater table before and during excavation activities.

Drainage Ditch or Swale – A clearly noticeable channel that is typically dry, except after precipitation events. Intermittent and perennial streams and rivers are not included in this definition.

Dredge – To dig, excavate, or otherwise disturb the contour or integrity of sediments in the bank or bed of a wetland, a surface water body, or other area within the regulating bodies' jurisdiction.

Dredge Spoils – Material removed as the result of dredging.

Embankment – A protective bank constructed of mounded earth or fill materials located between a roadway (or rail bed) and a seasonal stream or other wetland.

Environmental Field Issue – Document that contains copies of all project-specific environmental permits and summarizes all environmental permit conditions. The EFI is prepared by the Project Environmental Consultant or the National Grid Environment Scientist and copies are provided to the Project Manager, Construction Supervisor(s), and other team members as appropriate.

Environmental Monitoring Records – Examples of checklists and/or monitoring reports suggested for use by the Company Environmental Engineer to document conformance of the project with this Environmental Guidance and or project specific permit/license conditions.

Environmental Scientist – Formerly Environmental Engineer. The National Grid Environmental Department representative for the project or the territory where the work is located. For a map of Environmental Department staff territories, refer to the Environmental page of the National Grid infonet.

Environmentally Sensitive Areas – Examples of environmentally sensitive areas that may be found on National Grid properties are rivers, streams, ponds, lakes, wetlands, bogs, swamps, salt marshes, rare species habitat, wellhead protection areas, cultural sites, parks, preserves, schools and as otherwise defined by Federal, State or local regulations. Refer to EG-301.

Erosion Controls – The utilization of methods to prevent soil detachment and minimize displacement or washing down slopes by rainfall or run-off. Common practices include, but are not limited to:

(a) Temporary and Permanent Seeding.

(b) Mulching, Soil Binders, Tackifiers.

(c) Erosion Control Blankets.

(d) Hydraulic Erosion Control.

Excavate/Excavation – To dig, remove, or form a cavity or a hole in an area within the department's jurisdiction.

Fill (n.) – Any rock, soil, gravel, sand or other such material that has been deposited or caused to be deposited by human activity.

Fill (v.) – To place or deposit materials in or on a wetland, surface water body, bank or otherwise in or on an area within the jurisdiction of the department.

Flats – Relatively level landforms composed of unconsolidated mineral and organic sediments usually mud or sand, that are alternately flooded and exposed by the tides and that usually are continuous with the shore.

Frozen Condition – Field conditions when the upper portion of the ground surface freezes or when areas of standing water freeze solid such that vehicle passage over these areas is supported without any resulting soil disturbance. The frozen conditions must have been affected by severe cold (maximum daily temperatures less than 32 degrees F) for a continuous 2-week period.

GAA – Rhode Island groundwater classification, groundwater resources that are known, or presumed to be suitable for drinking water use without treatment, and are located in one of the three areas described below.

a) The state's major stratified drift aquifers that are capable of serving as a significant source for a public water supply ("groundwater reservoirs") and the critical portion of their recharge area as delineated by DEM;

b) The wellhead protection area for each public water system community water supply well. Community water supply wells are those that serve resident populations and have at least 15 service

connections or serve at least 25 individuals, e. g. municipal wells and wells serving nursing homes, condominiums, mobile home parks, etc.; and

c) Groundwater dependent areas that are physically isolated from reasonable alternative water supplies and where existing groundwater warrants the highest level of protection. At present only Block Island has been designated as meeting this criterion.

GA – Rhode Island groundwater classification, groundwater resources that are known, or presumed to be suitable for drinking water use without treatment. However, groundwater classified by GA does not fall within any of the three priority areas described under the GAA classification.

Grade/Grading – The movement of soil and fill material to change the elevation of the land. The term refers to the combined actions of excavating and filling to change elevation or shape.

Grubbing – The removal of stumps/roots by mechanical means during site preparation activities.

Immediately - As soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

In-kind Replacement - Replacement using the same material, functional inverts, diameter and length as the existing item. In-kind replacement includes the substitution of a structure with a similar structure in approximately the same location as is practicable, and is approximately the same in design. The design may be altered to meet applicable utility standards, and may include alternate materials designed to prolong the life of that service.

Intermittent Stream – A stream that flows for sufficient time to develop and maintain a defined channel, but which might not flow during dry portions of the year.

In the Dry – Work done either during periods of low water or behind temporary diversions, such as Earth Dike / Drainage Swale and Lined Ditches designed and installed in accordance with best management practices.

Limit of Work/Disturbance – The approved project limits within regulated areas. All project related activities in regulated areas must be conducted within the approved limit of work/disturbance. The limit of work/disturbance shall be depicted on the approved permit site plans and in the EFI plans. Where it is warranted National Grid may require that these limits be identified in the field by flagging, construction fencing, and/or perimeter erosion controls.

Long-Term Restoration Logs - Project-specific log used to document restoration required following the completion of construction or as areas of the project have been completed (i.e., segments of ROW for a multi-mile project). The log is typically updated by the Project Environmental Consultant or the National Grid Environment Scientist and circulated to the project team on a weekly basis.

Low Flow Conditions – Low water flow that generally occurs during the summer, as a result of decreased precipitation and the removal of water by increased evaporation and evapotranspiration by vegetation. Work done under low-flow conditions minimizes the potential for environmental damage. The USACE defines the calendar dates for low flow conditions in its New England state-specific Programmatic General Permits.

Low Ground Pressure – Equipment that meets the USACE GP state-specific defined Pounds per Square Inch (PSI) ground pressure when loaded. Use of LGP equipment ***requires approval*** from the National Grid Environmental Scientist.

Marsh – A wetland:

a) That is distinguished by the absence of trees and shrubs;

b) Dominated by soft-stemmed herbaceous plants such as grasses, reeds, and sedges; and

c) Where the water table is at or above the surface throughout the year, but can fluctuate seasonally.

Methods – Are the construction practices and procedures that take place through choosing the proper equipment, trucks and labor to execute the earth moving activities based on the existing conditions and implementing creative and sensitive scheduling for the daily activities.

NHESP - Natural Heritage Endangered Species Program; a department within the Massachusetts Division of Fisheries and Wildlife that is responsible for protecting the 176 species of vertebrate and invertebrate animals and 259 species of native plants that are officially listed as Endangered, Threatened or of Special Concern in Massachusetts.

Perennial – A stream that contains water at all times except during extreme drought.

Permanently Ceased – Is applicable to earth disturbance activities when clearing and excavation within any area of the Project that will not include permanent structures has been completed.

Person-in-Charge – A National Grid Project Engineer, Manager, Supervisor, Field Construction Coordinator or equivalent Contractor personnel assigned to oversee and coordinate work activities.

Processed Gravel – Processed Gravel shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001). Processed Gravel will not have fine materials that could lead to a turbid discharge. Gravel consisting of inert material that is hard, durable stone and is free from loam and clay, surface coatings and deleterious materials.

Regulating Body – Federal, State, or local authority that has jurisdiction over resource areas that may be impacted by company operations

Regulated Wetland Area – Those areas that are subject to federal, state or local wetland regulation, including certain buffer or adjacent areas.

Repair – The restoring of an existing legal structure by partial replacement of work, or broken, or unsound parts (Env-Wt 101.73).

Replacement – The substitution of a new structure for an existing legal structure with no change in size, dimensions, location, configuration, construction, or which conforms in all material aspects to the original structure

Right-of-Way – A corridor of land where National Grid has legal rights (either fee ownership, lease or easement) to construct, operate, and maintain an electric power line and/or natural gas pipeline and may include work on customer owned properties.

River – A watercourse that is larger than a perennial stream and flows all year long.

Routine Utility Rights-of-Way Maintenance Activity – Includes but is not limited to vegetation management and repair or replacement of existing utility structures.

Sedimentation Controls – Silt fences, straw bales, compost socks/berms and other barrier devices strategically placed to intercept and treat sediment-laden site runoff.

Sensitive Water - Includes any sediment or nutrient impaired water or a water that is identified by the state, tribe or EPA as Tier 2, 2.5 or Tier 3 for antidegradation purposes.

Siltation Curtain – An impervious barrier erected to prevent silt and sand and/or fines from being washed into a wetland, surface water body or other area of concern.

Surface Water Body or Surface Waters – Those portions of waters which have standing or flowing water at or on the surface of the ground.

Spill Prevention, Control and Countermeasure Plans – Required for site operations that involve the storage of 1,320 gallons or greater of fuel and oils, both in storage containers and stored in equipment. Response actions to spills and releases are specified in these plans.

Stormwater Pollution Prevention Plan – A site-specific, written document that, among other things: (1) identifies potential sources of stormwater pollution at a construction site; (2) describes stormwater control measures to reduce or eliminate pollutants in stormwater discharge from a construction site; and (3) identifies procedures the operator will implement to comply with the terms and conditions of EPA NPDES Construction General Permit (CGP). SWPPPs must be prepared, maintained on-site, and amended as necessary in order to obtain NPDES permit coverage for specific construction site stormwater discharges under the EPA NPDES CGP.

Temporarily Ceased - Is applicable when there are earth disturbance activities such as clearing, grading, and/or excavation that are not complete, but will be idle in one area for a period of up to 14 or more calendar days, and which will resume in the future. The 14 calendar day timeframe begins as soon as you now that construction work on a portion of the Project will be left incomplete and idle. In circumstances where there are unanticipated delays and you do not know at first how long the work stoppage will continue, the requirement to immediately initiate stabilization is triggered as soon as you know with reasonable certainty that work will be stopped for 14 or more additional calendar days.

Tidal Wetlands – A wetland whose vegetation, hydrology or soils are influenced by periodic inundation or tidal waters.

Topsoil – The uppermost part of the soil, ordinarily moved in tillage, or its equivalent in uncultivated soils and ranging in depth from 2 to 10 inches.

Turbidity – The condition in which solid particles suspended in water make the water cloudy or even opaque in extreme cases.

United States Geological Survey Topographic Map – A map that uses contour lines to represent the three-dimensional features of a landscape on a two-dimensional surface. These maps use a line and symbol representation of natural and artificially created features in an area.

Wetland – An area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation (more than 50 percent) typically adapted for life in saturated soil conditions (hydric soils). Wetlands include but are not limited to swamps, marshes, bogs, and similar areas.

Work Site – An area where work is performed.

Worker – Company employee, contractor, consultant working on site.

Zone II - Massachusetts - That area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at safe yield, with no recharge from precipitation). It is bounded by the groundwater divides which result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone IIs shall extend up gradient to its point of intersection with prevailing hydrogeologic boundaries (a groundwater flow divide, a contact with till or bedrock , or a recharge boundary).

Appendix 2 – Acronyms

ASTM	American Society for Testing and Materials
BMP	Best Management Practices
EFI	Environmental Field Issue
EG	Environmental Guidance
EPA	Environmental Protection Agency
GA/GAA	Rhode Island Groundwater Classifications – see glossary
LGP	Low Ground Pressure
MA	Massachusetts
MA DEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
NE	New England
NH	New Hampshire
NH DES	New Hampshire Department of Environmental Services
NHESP	Natural Heritage Endangered Species Program
NPDES	National Pollutant Discharge Elimination System
OHM	Oil and/or Hazardous Materials
PSI	Pounds per square inch
RI	Rhode Island
RI DEM	Rhode Island Department of Environmental Management
RI CRMC	Rhode Island Coastal Resources Management Council
RI SESC	Rhode Island soil erosion and sediment control
ROW	Right-of-Way
RTE	Rare, Threatened or Endangered
SPCC	Spill Prevention, Control and Countermeasure
SWPPP	Storm Water Pollution Prevention Plan
TOY	Time-of-Year
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
VT	Vermont

VT DEC	Vermont Department of Environmental Conservation
Zone II	Massachusetts Groundwater Protection district – see glossary

Appendix 3

See EG303NE_Appendix3_Reporting Form published separately

National Grid
Storm Water, Wetlands & Priority Habitat Environmental Compliance
Site Inspection / Monitoring Report

Project Name:		**Date:**	
City / Town:		**Time:**	
WO / WR #			

IHC or Contractor? (Company Name):

Current Weather Conditions:

Precipitation Since Last Inspection (Date, Est. Duration and Est. Amount from Each Storm):

Activities / Structures / Locations Inspected:

Identify Locations / Activities / Structures within Designated Priority Habitat (Identify Rare species Observations, if any) and Mitigation / Restoration Measures Implemented:

Any Significant Discharges of Sediment to Water Bodies or Wetlands? (If "yes", state locations):

National Grid
Storm Water, Wetlands & Priority Habitat Environmental Compliance
Site Inspection / Monitoring Report

Compliance with SWPPP Storm Water Controls, O&M Plan, Order of Conditions or Other Applicable Environmental Requirements? (Explain if "no" for any feature inspected):

Additional BMPs or Other Corrective Action Needed and, if so, Where?

Compliance with Previous Observations?

National Grid
Storm Water, Wetlands & Priority Habitat Environmental Compliance
Site Inspection / Monitoring Report

Are Spill Control Supplies Available	**Yes**	**No**
Are Oil and / or Hazardous Materials Stored On Site?	**Yes**	**No**
If So, Are they Properly Labeled and Managed?	**Yes**	**No**
Are Wastes Stored On Site?	**Yes**	**No**
If So, Are they Properly Managed?	**Yes**	**No**

Miscellaneous (e.g., dumping?):

Comments:

Inspection Completed by (Name, Title, Company):

Inspector's Signature for Certification:

National Grid Environmental Dept. Representative - Signature for Certification:

Date:

Appendix 4 – BMPs

See EG303NE_Form1 for a list of BMPS

See EG303NE_Form2 for BMP details

	BMP #	Measure
Sediment & Erosion Controls	SEC-1	Weed free bale barrier
	SEC-2	Sediment control fence
	SEC-3	Silt fence / weed free barrier
	SEC-4	Silt Soxx
	SEC-5	Straw Wattle
	SEC-6	Erosion Control Blanket - Ditch
	SEC-7	Erosion Control Blanket - Slope
	SEC-8	Hydroseeding with Tackifier (slope stabilization)
	SEC-9	Mulch materials, rates and uses (from NY)
	SEC-10	Seeding options - Upland Seed Mixes
	SEC-11	Seeding options - Wetland Seed Mix
	SEC-12	Distribution Pole Erosion Control
Crossing Measures	CM-1	Prefabricated mats
	CM-2	Construction mat bridge
	CM-3	Construction mat layout (with transition)
	CM-4	Construction mat layout (with transition & BMPs)
	CM-5	Construction mat - Air Bridge
	CM-6	Corduroy road
	CM-7	Rock Ford
	CM-8	Temporary construction entrance / exit
	CM-9	Temporary construction culvert
	CM-10	Access way stabilization
	CM-11	Construction signage
	CM-12	Construction Mat Anchoring
Advanced Applications	AA-1	Reinforced silt fence
	AA-2	Sediment filter
	AA-3	Stone check dams
	AA-4	Straw / haybale check dam
	AA-5	Waterbar
	AA-6	Sandbag check dam
	AA-7	Earth dike
	AA-8	Drainage swale and lined ditch
	AA-9	Sedimentation basin
	AA-10	Dewatering basin - Small scale
	AA-11	Dewatering basin - Large scale
	AA-12	Dirtbag
	AA-13	Concrete waste sump

	AA-14	Outpak concrete washout
Advanced Applications	AA-15	Barrier fence (construction fence)
	AA-16	ROW gates / fences
	AA-17	Bollard
	AA-18	Dust control
	AA-19	Catch Basin Inlet Protection
	AA-20	Silt Sack
	AA-21	Turbidity Curtain
	AA-22	Siltsoxx Amphibian & Reptile Crossing #1
	AA-23	Siltsoxx Amphibian & Reptile Crossing #2
	AA-24	Siltsoxx Amphibian & Reptile Crossing #3
	AA-25	Cultural Avoidance

BMP DETAIL

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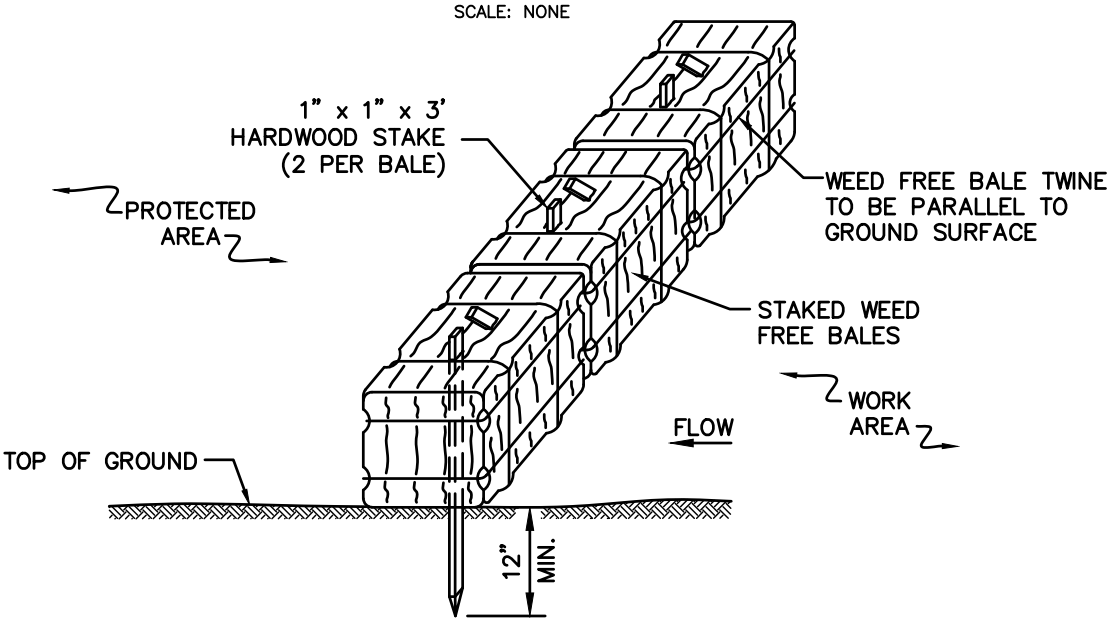

NOTES:

1. THE GROUND SHALL BE PREPARED TO PROVIDE COMPLETE CONTACT WITH THE BALES.

BMP PICTURE

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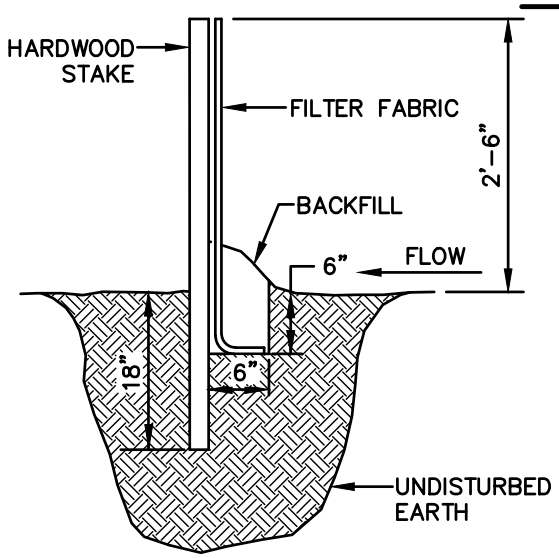
SEC-1
WEED FREE BALE BARRIER

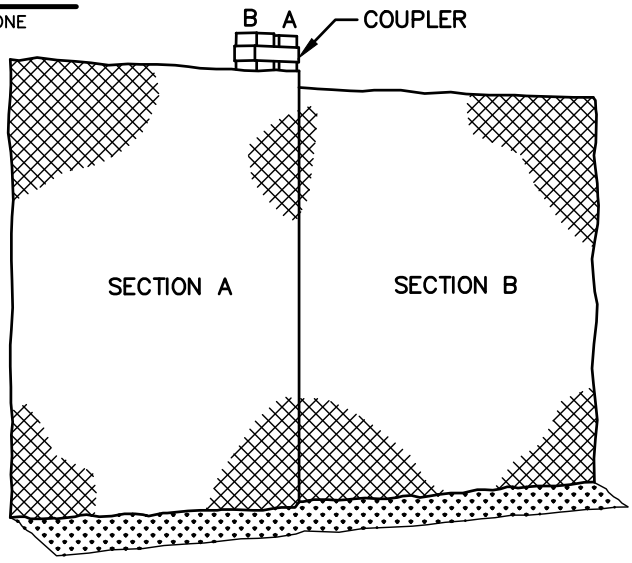
File: BALE_BARRIER.DWG

BMP DETAIL

SCALE: NONE



PROFILE



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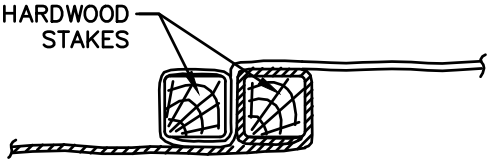


PLAN

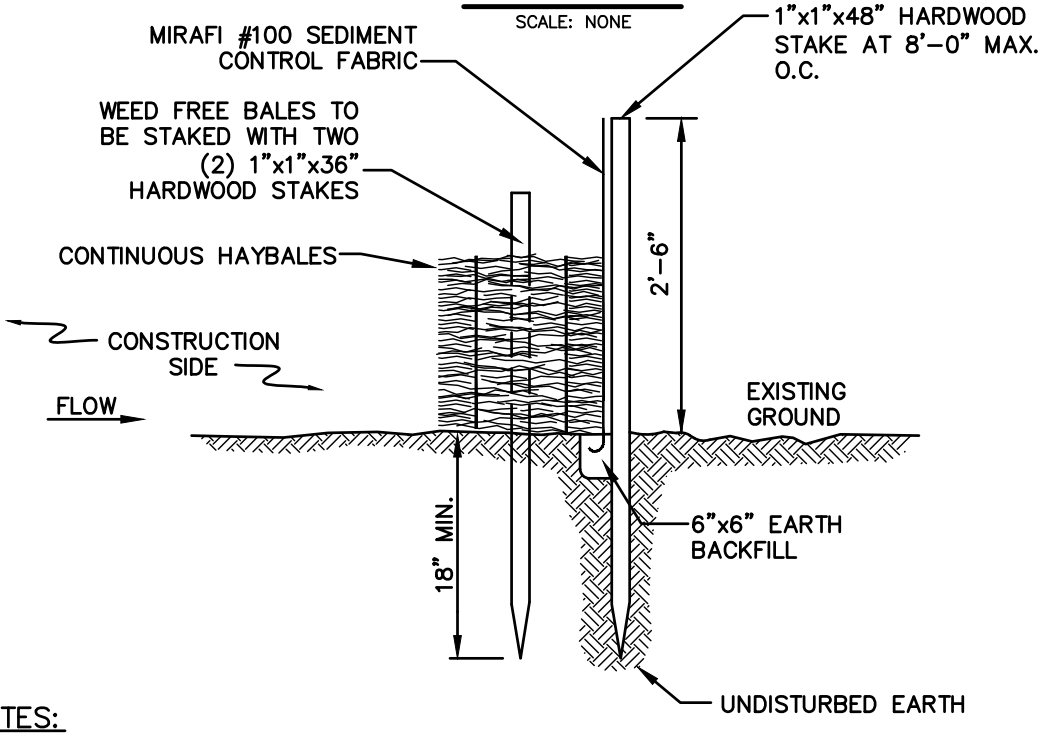
BMP PICTURE

SEC-2
SEDIMENT CONTROL FENCE

File: Sediment_Fence.dwg

BMP DETAIL

SCALE: NONE



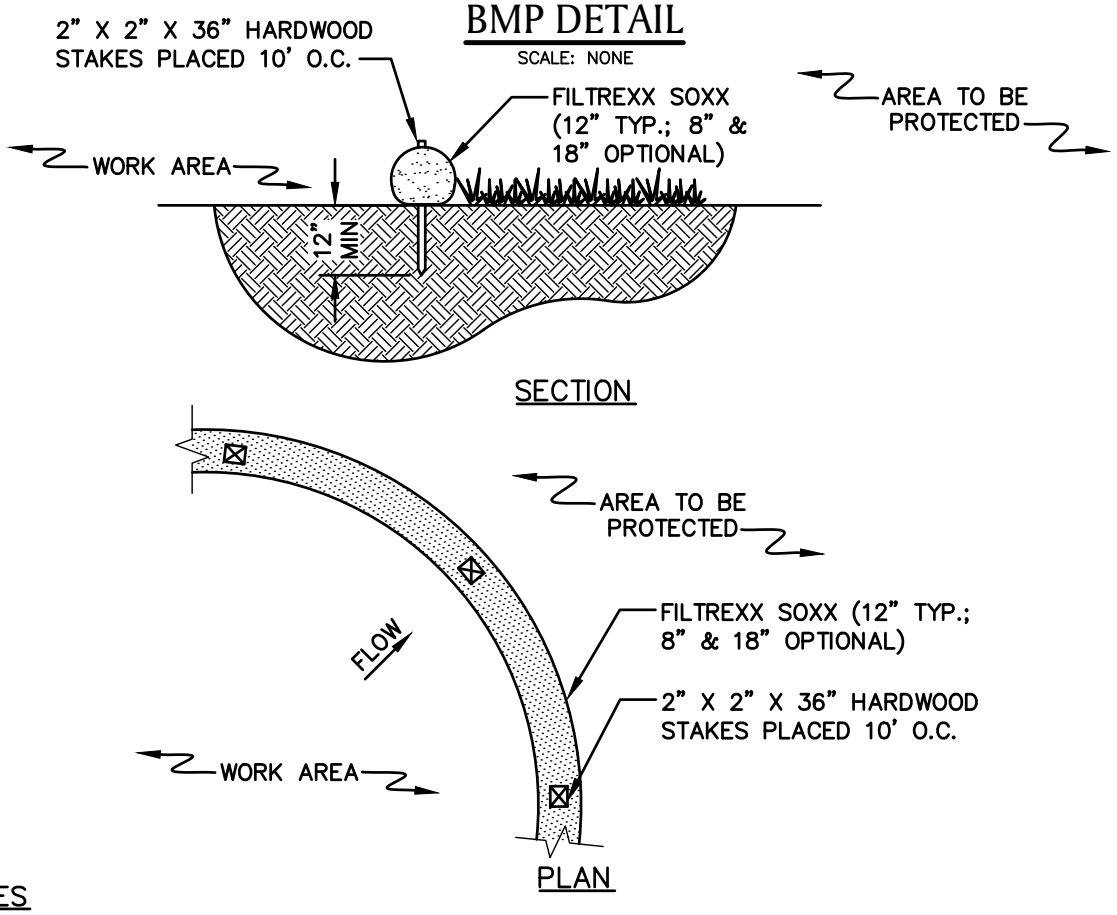
NOTES:

1. BALES SHALL BE PLACED IN A ROW WITH THE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. BALES SHALL BE SECURELY ANCHORED IN PLACE BY TWO (2) 1"X1"X36" HARDWOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
3. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
4. BALES SHALL BE REMOVED AND REPLACED WHEN THEY BECOME FILLED WITH SEDIMENT AND BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
5. BALES SHALL BE REMOVED WHEN THE EMBANKMENTS STABILIZE.
6. BALES TO BE TWINE BOUND.

BMP PICTURE

BMP DETAIL

SCALE: NONE



NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. MESH CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" – 3/8".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

*** PICTURE AND DETAIL PROVIDED BY FILTREXX LAND IMPROVEMENT SYSTEMS**
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SEC-4
SILT SOXX *

File: SiltSOXX.dwg

BMP DETAIL

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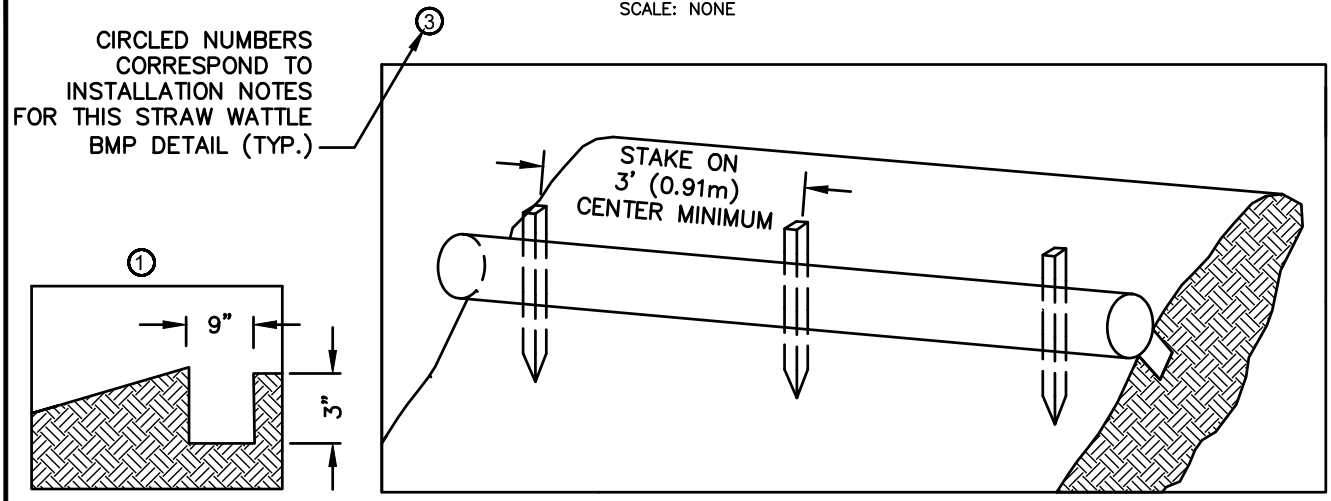
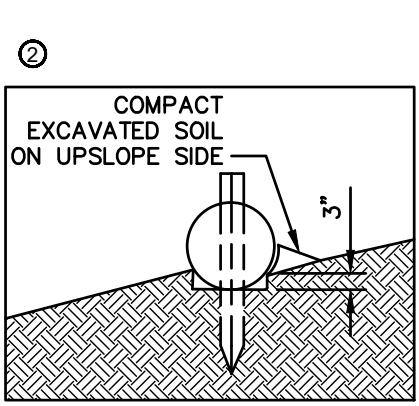
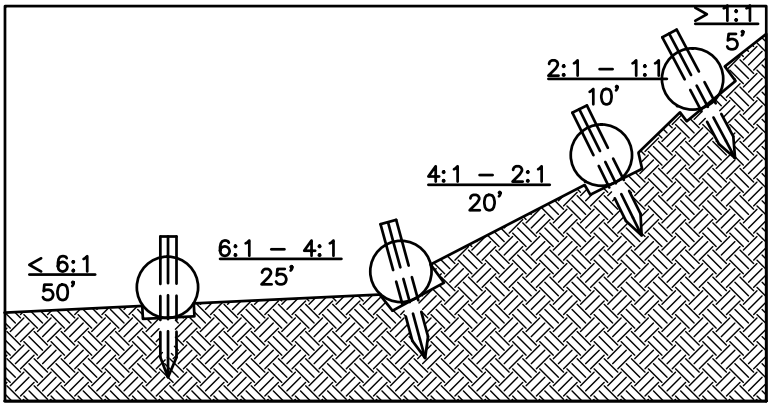






TYPICAL WATTLE SPACING DETAIL

NOTES:

1. PRODUCT TO BE TENSAR NORTH AMERICAN GREEN STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. TYPICAL WATTLE SPACING BASED ON SLOPE GRADIENT. COORDINATE SPACING AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
3. MINIMUM 12" DIAMETER WATTLES SHOULD BE USED FOR HIGHLY DISTURBED AREAS (I.E., HEAVILY USED ACCESS ROAD WITH ADJACENT WETLAND) AND MINIMUM 9–10" WATTLES SHOULD BE USED FOR LESS DISTURBED SOILS.

INSTALLATION NOTES:

1. BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2–3" DEEP X 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UPSLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. ADJACENT WATTLES SHOULD TIGHTLY ABUT.
3. SECURE THE WATTLE WITH 18–24" HARDWOOD STAKES EVERY 3–4' AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLE LEAVING AT LEAST 2–3" OF STAKE EXTENDING ABOVE THE WATTLE. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

*** DETAIL AND PICTURE PROVIDED BY TENSAR NORTH AMERICAN GREEN**

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES

SEC-5

STRAW WATTLE * (1 OF 2)

File: Straw_Wattle.dwg

BMP PICTURE

STRAW WATTLE – SHALLOW SLOPE (≤4:1)
(ALTERNATE STAKING)

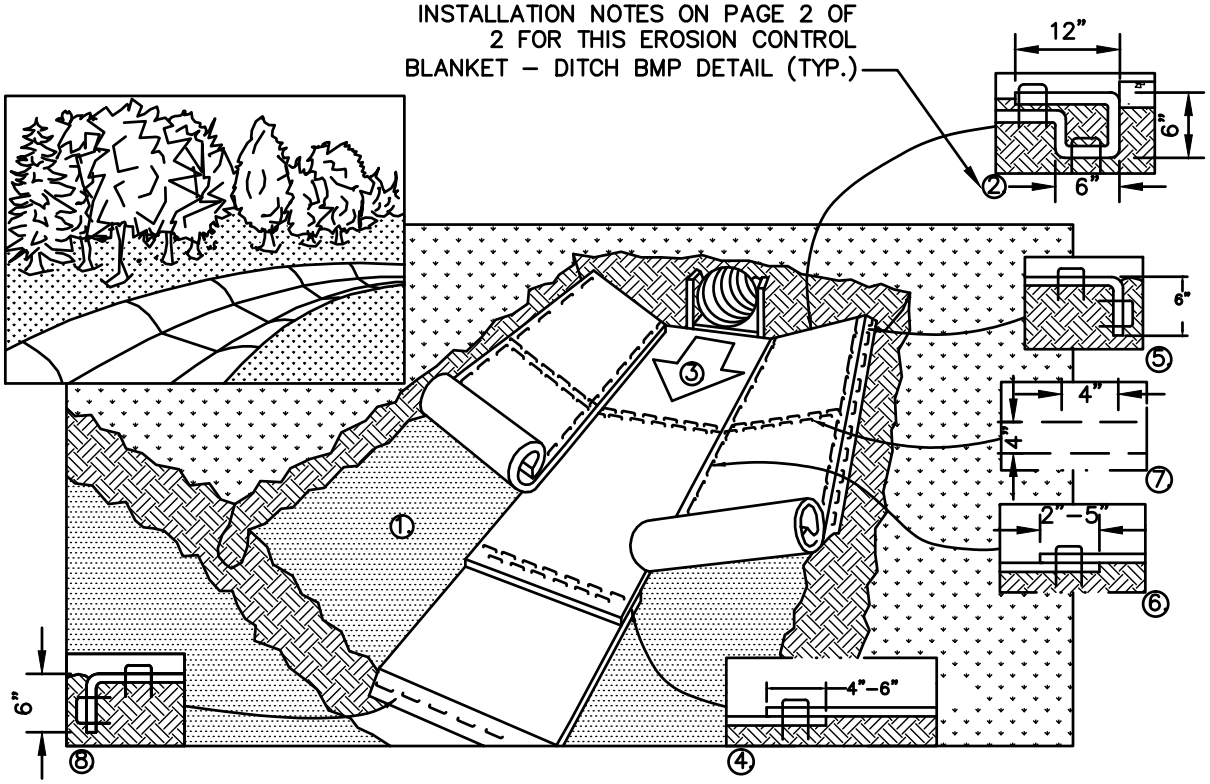
ALTERNATE STAKING INSTALLATION NOTES:

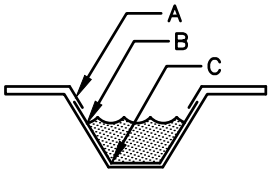
1. ON SHALLOW SLOPES (≤4:1), STRAW WATTLE MAY BE SECURED WITH 18–24" HARDWOOD STAKES DRIVEN AGAINST THE SIDES OF THE WATTLE INSTEAD OF THROUGH. STAKES SHALL ALTERNATE SIDES, AND BE SPACED 3–4' MAX.
2. TWINE SHALL BE TIED FROM STAKE TO STAKE, CRISS–CROSSING THE STRAW WATTLE. TIE TWINE TO STAKES BELOW THE HEIGHT OF THE WATTLE.

BMP DETAIL

SCALE: NONE

CIRCLED NUMBERS CORRESPOND TO INSTALLATION NOTES ON PAGE 2 OF 2 FOR THIS EROSION CONTROL BLANKET – DITCH BMP DETAIL (TYP.)





CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTES:

1. PRODUCT TO BE NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.
3. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY ANCHOR THE ROLLED EROSION CONTROL PRODUCTS (RECP's).

BMP DETAIL

INSTALLATION NOTES:

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMAPCT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. ™ WHEN USING THE DOT SYSTEM , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" – 6" (10 CM –15 CM) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" – 5" (5 CM –12.5 CM) (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9 M – 12 M) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

BMP PICTURE

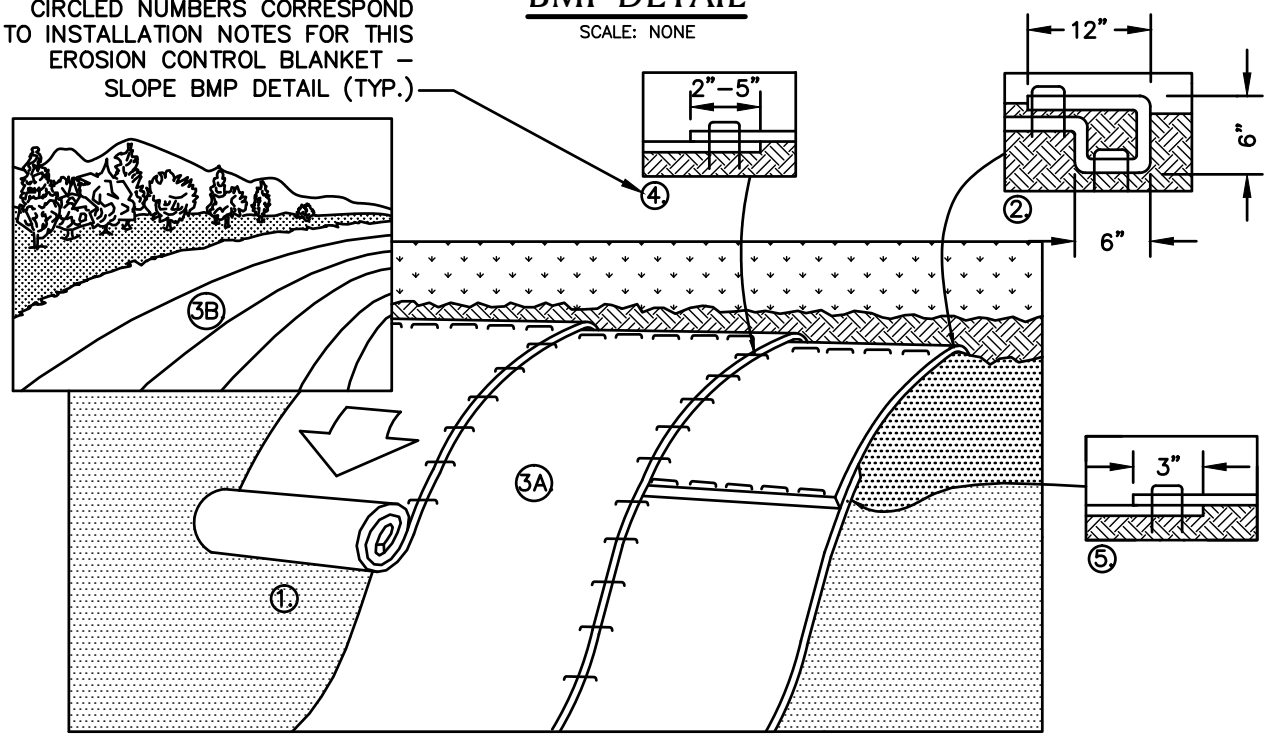
*** PICTURE AND DETAIL PROVIDED BY TENSAR NORTH AMERICAN GREEN**
APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES

SEC-6
EROSION CONTROL BLANKET - DITCH * (2 OF 2)

File: Erosion_Blanket_Ditch.dwg

BMP DETAIL

SCALE: NONE



NOTES:

1. PRODUCT TO BE NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLES OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

INSTALLATION NOTES:

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.

*** PICTURE AND DETAIL PROVIDED BY TENSAR NORTH AMERICAN GREEN**

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SEC-7

EROSION CONTROL BLANKET - SLOPE * (1 OF 2)

File: Erosion_Blanket_Slope.dwg

BMP PICTURE

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SEC-7
EROSION CONTROL BLANKET - SLOPE * (2 OF 2)

BMP PICTURE

NOTES:

1. COORDINATE MIXTURE TYPE AND APPLICATION AREAS WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.
2. A MINIMUM OF 1500 LBS. PER ACRE OF A PAPER/CORN FIBER OR EQUIVALENT WITH NATURAL TACKIFIERS WILL BE USED ON SLOPES LESS THAN 3:1.
3. A BFM (BONDED FIBER MATRIX) WILL BE USED ON SLOPES GREATER THAN 2:1.
4. A FGM (FLEXIBLE GROWTH MATRIX) OR ESM (EXTREME SLOPE MATRIX) WILL BE USED ON SLOPES GREATER THAN 1:1.
5. REFER TO BMP #10 FOR SEED MIXTURE OPTIONS.

* PICTURE PROVIDED BY TENSAR NORTH AMERICAN GREEN
* TACKIFIER INFORMATION PROVIDED BY FILTREXX LAND IMPROVEMENT SYSTEMS AND TENSAR NORTH AMERICAN GREEN

SEC-8
HYDROSEEDING WITH TACKIFIER
(SLOPE STABILIZATION) *

File: Hydroseeding.dwg

BMP

Definition

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface.

Purpose

The primary purpose is to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch is also used alone for temporary stabilization in non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/ acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

NOTE:

1. PICTURE DEPICTS STRAW MULCH APPLICATION (FROM MULCH SPREADER) ON STEEP SLOPE WITH AN IMPROVED DRAINAGE SWALE.
2. COORDINATE MULCH MATERIALS AND RATES WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

* BMP INFORMATION FROM "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (AUGUST, 2005)." INFORMATION OBTAINED VIA WEBSITE: http://www.dec.ny.gov/chemical/29066.html

UPLAND ROW RESTORATION MIX – GENERAL

Species Composition Options:

- Andropogon gerardii; Niagra Big Bluestem
- Schizachyrium scoparium; Little Bluestem
- Elymus Canadensis; Canada Wild Rye
- Elymus virginicus; Virginia Wildrye
- Lolium multiflorum; Annual Ryegrass
- Sorghastrum nutans; Indiangrass
- Chamaecrista fasciculate; Partridge Pea
- Desmodium canadense; Showy Tick Trefoil
- Helioposis helianthoides; Ox–Eye Sunflower
- Panicum virgatum; Switchgrass
- Rudbeckia hirta; Black Eyed Susan
- Poa palustris; Fowl Bluegrass
- Agrostis perennans; Upland Bentgrass
- Agrostis alba; Redtop
- Festuca rubra; Red Fescue
- Lotus corniculatus; Birds–Foot Trefoil
- Chrysanthemum leucanthem; Ox–Eye Daisy
- Aster novae–angliae; New England Aster

Example Seed Mixes:

1. Native Upland wildlife forage and Cover Meadow Mix – Ernst Conservation Seeds (ERNMX–123)
2. Eastern Ecotype Native Grass Mix– Ernst Conservation Seeds (ERNMX–177)
3. New England Native Warm Season Grass Mix – New England Wetland Plants, Inc.
4. New England Logging Road Mix – New England Wetland Plants, Inc.
5. Northeast Upland Wildflower/Restoration Erosion Mix – Southern Tier Consulting (STCMX–2)

UPLAND ROW RESTORATION MIX – DRY/ROCKY SITES

Species Composition Options:

- Festuca rubra; Red Fescue
- Schizachyrium scoparium; Little Bluestem
- Elymus Canadensis; Canada Wild Rye
- Bouteloua gracillis; Blue Grama
- Lolium multiflorum; Annual Ryegrass
- Lolium perenne; Perennial Ryegrass
- Agrostics scabra; Rough Bentgrass
- Agrostis perennans; Upland Bentgrass
- Sorghastrum nutans; Indiangrass

Example Seed Mixes:

1. New England Erosion Control/ Restoration Mix for Dry Sites – New England Wetland Plants, Inc.
2. Ernst Conservation Seeds and similar companies can create a custom seed mix matching the composition above (with site specific additions if necessary).

WETLAND ROW RESTORATION MIX

Species Composition Options:

- Agrostis stolonifera; Creeping Bentgrass
- Poa trivialis; Rough Bluegrass
- Alopecurus arundinaceus; Creeping Meadow Foxtail
- Lolium multiflorum; Annual Ryegrass
- Festuca rubra; Creeping Red Fescue
- Elymus virginicus; Virginia Wildrye
- Schizachyrium scoparium; Little Bluestem
- Andropogon gerardii; Niagra Big Bluestem
- Carex vulpinoidea; Fox sedge
- Panicum virgatum; Switchgrass
- Agrostis scabra; Rough Bentgrass
- Aster novae–angliae; New England Aster
- Eupatorium perfoliatum; Boneset
- Euthamia graminifolia; Grass Leaved Goldenrod
- Scirpus atrovirens; Green Bulrush
- Verbene hastate; Blue Vervain
- Juncus effusus; Soft Rush
- Scirpus cyperinus; Wool Grass
- Panicum clandestinum; Deertongue

Example Seed Mixes

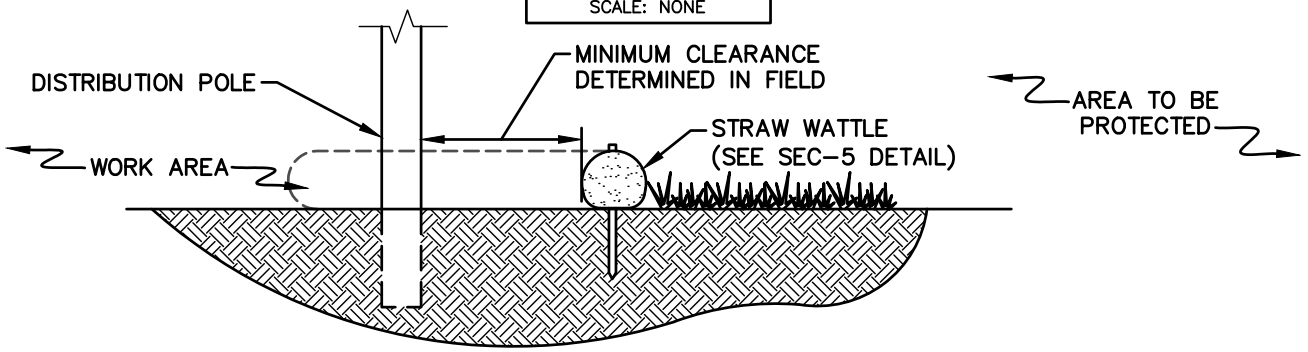
1. New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites – New England Wetland Plants, Inc.
2. Northeast Wetland Grass Seed Mix – Southern Tier Consulting (STCMX–7)
3. Ernst Conservation Seeds and similar companies can create a custom seed mix matching the composition above (with site specific additions if necessary).

GERNERAL NOTES:

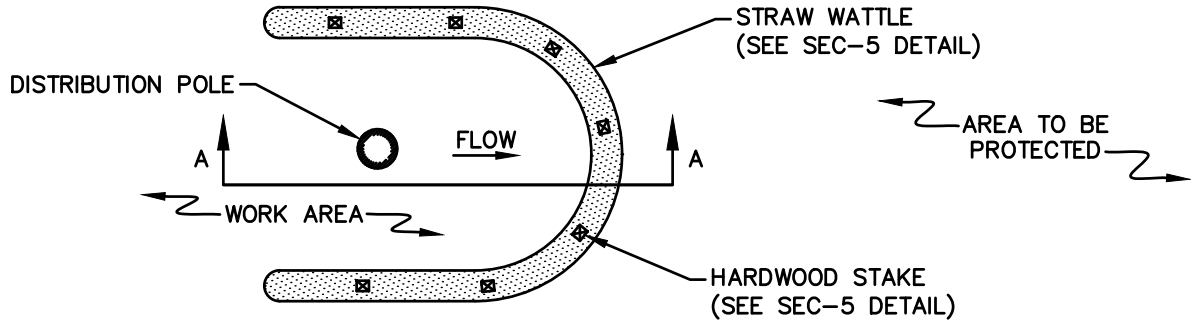
1. Seed mixes described herein are intended to cover a variety of typical new england landscapes. However, site specific seed mixes will need to be evaluated in coastal or mountainous regions.
2. Seed mixes described herein are intended for general ROW restoration. Site specific wetland seed mixes may be required by local, state and/or federal regulators for certain impacts to wetlands.
3. All seed mixes are to be approved by National Grid Environmental Scientist prior to construction and must conform with all project permits.
4. Seedbed preparation and maintenance as well as temporary erosion and sediment controls are crucial to the establishment of newly seeded areas. Coordinate with National Grid Environmental Scientist on seed bed preparation and maintenance as well as temporary erosion and sediment controls prior to construction.

BMP DETAIL

SCALE: NONE



SECTION A–A



PLAN

NOTES

1. PRODUCT TO BE STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE SEC–5 BMP DETAIL).
2. STRAW BALE BARRIER PER SEC–1 BMP DETAIL TO BE AN AVAILABLE ALTERNATE DEPENDING ON SITE CONDITIONS AT THE DIRECTION OF NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE FIGURE 2).
3. MINIMUM CLEARANCE BETWEEN POLE AND EROSION CONTROL TO BE DETERMINED BY CONDITIONS OF POLE INSTALLATION/REPLACEMENT WORK AND ASSOCIATED DISTURBANCE.

BMP PICTURE

FIGURE 1: TYP. STRAW WATTLE APPLICATION

FIGURE 2: ALT. STRAW BALE APPLICATION

BMP PICTURE

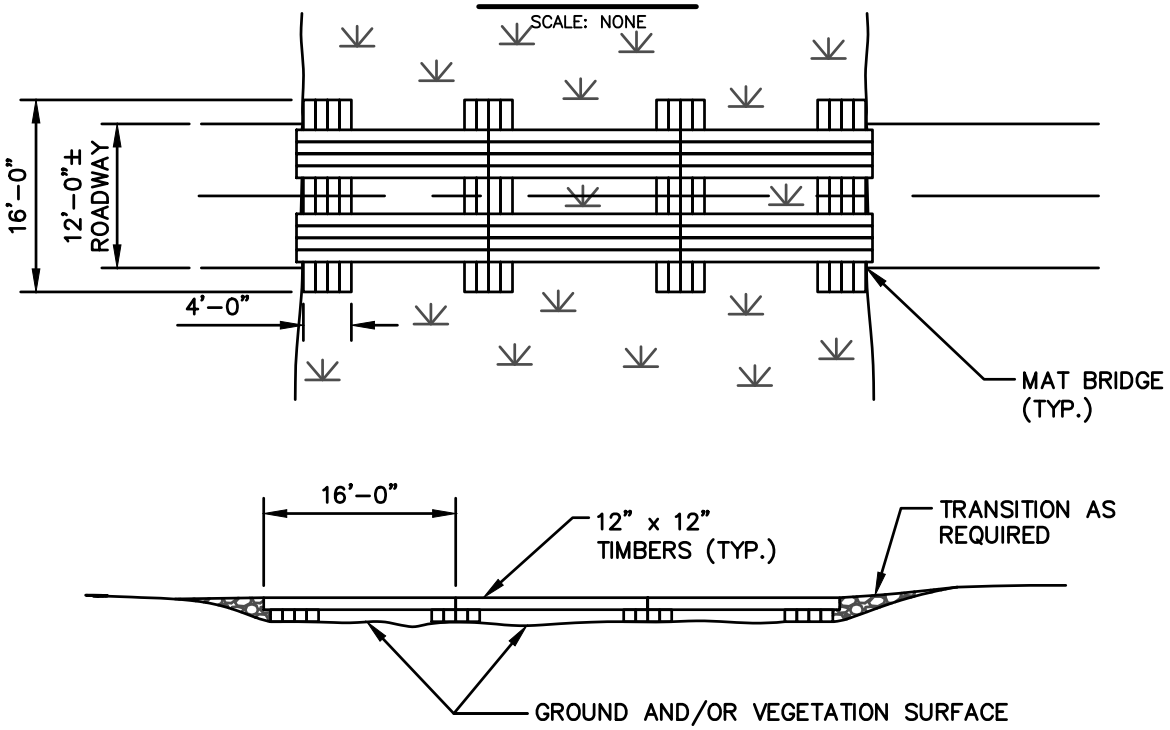
SCALE: NONE

NOTES:

1. PRODUCT TO BE ALTURNAMATS' PREFABRICATED MATS OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. PRODUCT AVAILABLE IN 4X8' UNITS.
3. IF MATS ARE INSTALLED IN A WETLAND AREA, INSTALL EROSION CONTROLS TO CONTAIN MATERIAL UTILIZED IN THE MAT TRANSITIONS.

BMP DETAIL

SCALE: NONE



NOTES:

1. IF MATS ARE INSTALLED IN A WETLAND AREA, INSTALL EROSION CONTROLS TO CONTAIN MATERIAL UTILIZED IN THE MAT TRANSITIONS.

BMP PICTURE

BMP PICTURE - SINGLE SPAN

SCALE: NONE

NOTES:

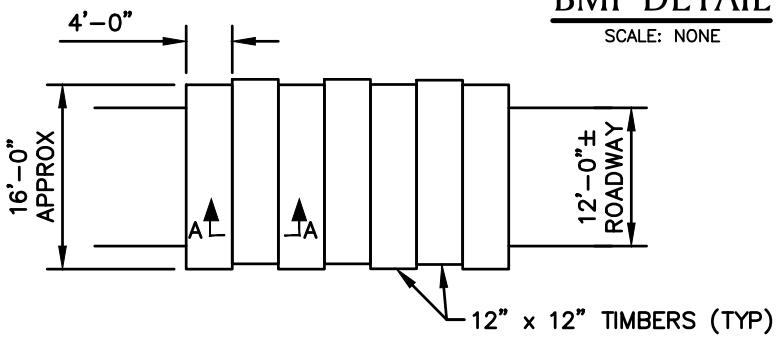
1. WHERE STREAM WIDTH ALLOWS, INSTALL CONSTRUCTION MATS TO SPAN THE WATERCOURSE IN ITS ENTIRETY WITHOUT STRINGER PLACEMENT IN THE WATER OR ANY RESTRICTION OF STREAM FLOW.

2. INSTALLATION OF THE CONSTRUCTION MAT BRIDGE SHALL NOT DAMAGE THE STREAM BED AND BANKS. WHERE POSSIBLE, FOOTERS SHALL BE PLACED PARALLEL TO THE TOP OF THE STREAM BANKS, WITH ACCESS MATTING PLACED ACROSS THE TOP OF THE STRINGERS DISTRIBUTING THE WEIGHT OF THE CONSTRUCTION EQUIPMENT.

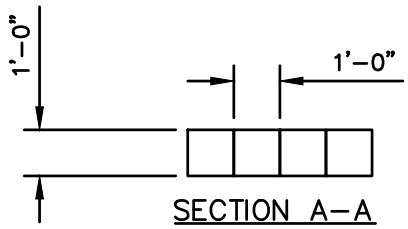
3. AT STREAM CROSSINGS THAT CANNOT BE SPANNED BY A SINGLE SECTION OF CONSTRUCTION MATTING, AND WHERE PERMITS ALLOW, STRINGERS SHALL BE PLACED ATOP THE STREAM BED PARALLEL TO THE FLOW OF WATER.

BMP DETAIL

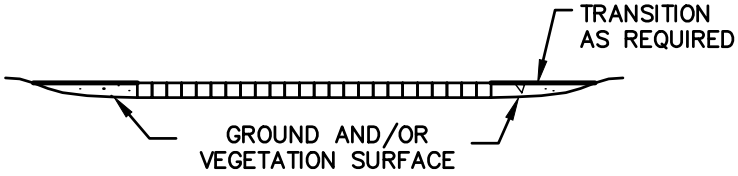
SCALE: NONE



TYPICAL PLAN VIEW



SECTION A–A
TYPICAL MAT SECTION
BOLTED TOGETHER



TYPICAL SECTION VIEW

NOTES:

1. TO BE INSTALLED IF NECESSARY TO PREVENT RUTTING, TO ACCESS STRUCTURES.
2. THIS DETAIL SHOWS TYPICAL DIMENSIONS. SOME CONTRACTOR'S CONSTRUCTION MATS ARE DIMENSIONALLY DIFFERENT FROM WHAT IS SHOWN HERE.
3. DEPENDENT ON SITE CONDITIONS, MULTIPLE LAYERS OF CONSTRUCTION MATS MAY BE INSTALLED.

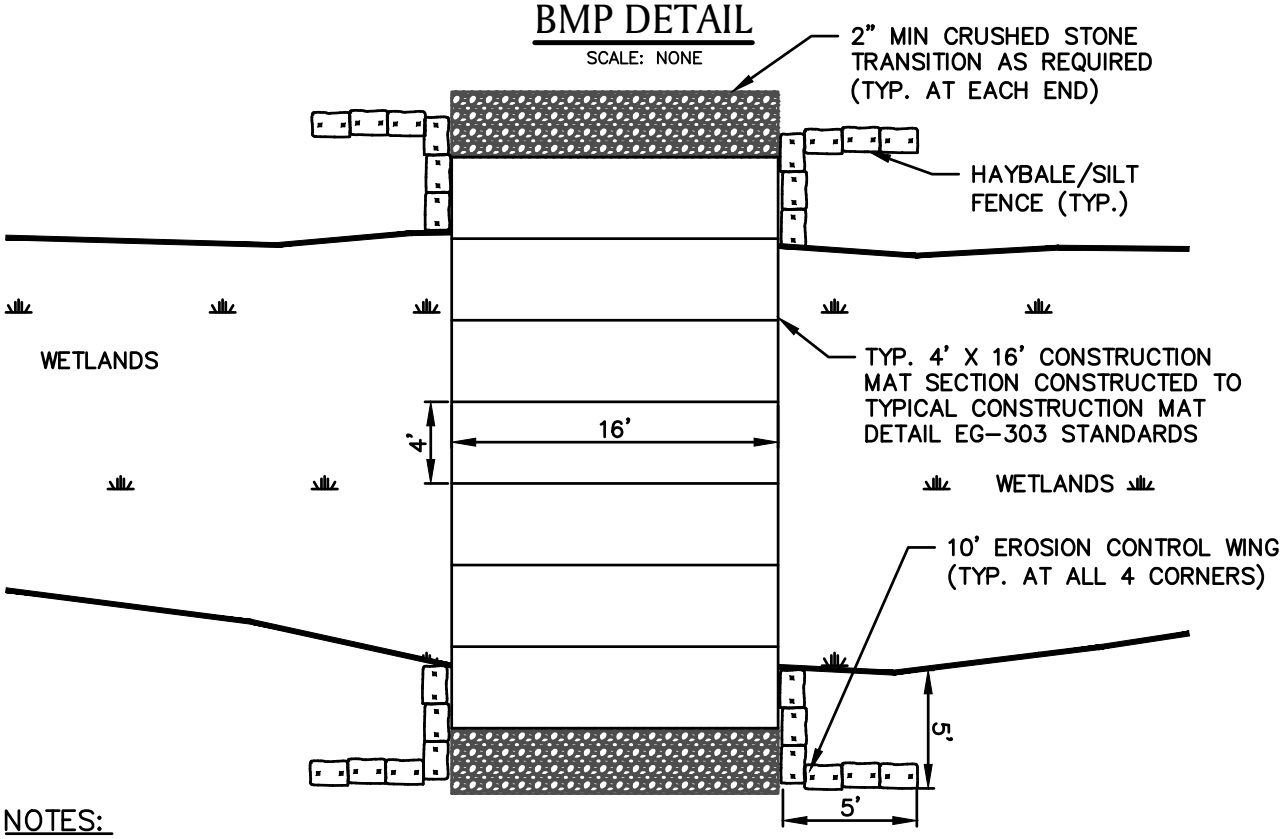
BMP PICTURE

CM-3
CONSTRUCTION MAT LAYOUT
(WITH TRANSITION)

File: Swamp_Mat_Layout.dwg

BMP DETAIL

SCALE: NONE



NOTES:

1. ADD FILTER FABRIC AS NEEDED UNDER STONE TRANSITION RAMPS.
2. ALL MEASUREMENTS AND LOCATIONS ARE APPROXIMATE.

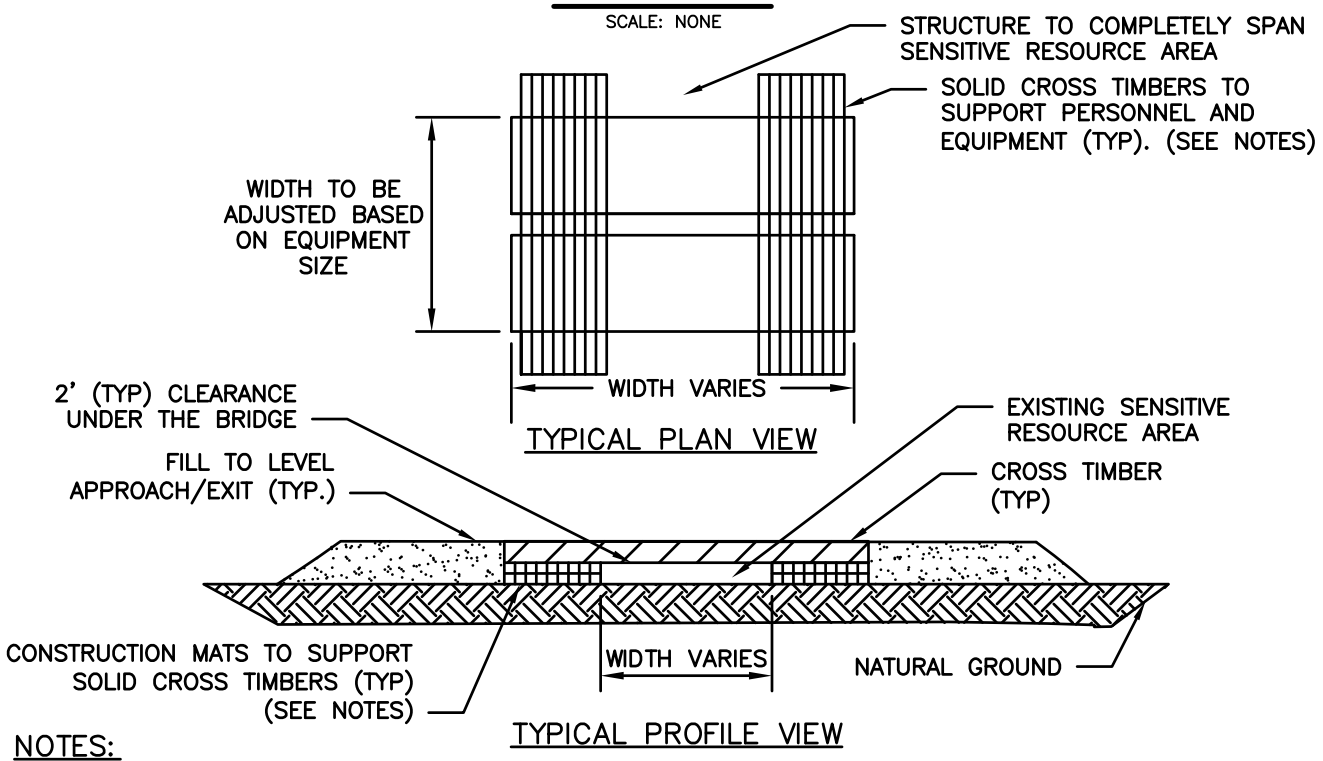
BMP PICTURE

CM-4
CONSTRUCTION MAT LAYOUT
(WITH TRANSITION AND BMPs)

File: Swamp_Mat_Transition and BMPs.dwg

BMP DETAIL

SCALE: NONE



NOTES:

1. THE DETAIL SHOWN IS CONCEPTUAL. CONSTRUCTION MATS AND CROSS TIMBERS SHALL BE SIZED AND SELECTED BASED ON SPAN WIDTH, CROSSING EQUIPMENT AND FIELD CONDITIONS.
2. THE NUMBER OF CONSTRUCTION MATS MAY VARY DEPENDING ON THE CLEARANCE HEIGHT.
3. EQUIPMENT AND PERSONNEL LOAD SHALL BE DISTRIBUTED ON ALL TIMBERS.
4. EACH EQUIPMENT OPERATOR AND USER OF THE FIELD BRIDGE SHALL BE FAMILIAR WITH THE DESIGN AND THE MAXIMUM EQUIPMENT AND PERSONNEL LOADS.
5. THIS DETAIL MAY NOT BE APPLICABLE IN ALL FIELD CONDITIONS.
6. INSTALL EROSION CONTROLS ADJACENT TO THE CULVERT ENDS TO PROTECT THE WATERWAY FROM ROADWAY DEBRIS.

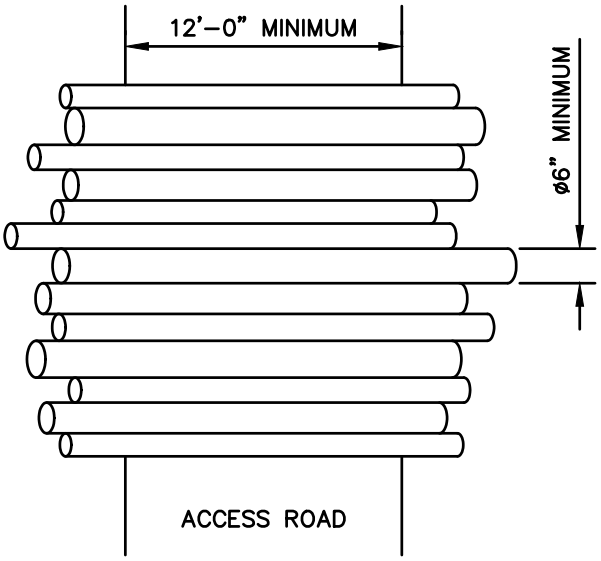
BMP PICTURE

CM-5
CONSTRUCTION MAT - AIR BRIDGE

File: Swamp_Mat_AIR BRIDGE.dwg

BMP DETAIL

SCALE: NONE



RANDOM LENGTH AND DIAMETER LOGS PLACED ACROSS AN ACCESS ROAD

NOTE:

1. A SIMILAR BRUSH MAT INSTALLATION CONSISTING OF SMALLER DIAMETER STEMS AND LOGS CAN BE USED.
2. CORDUROY ROADS SHALL ONLY BE USED IN EMERGENCIES OR AFTER APPROVAL FROM THE PROJECT ENVIRONMENTAL CONSULTANT OR NATIONAL GRID ENVIRONMENTAL SCIENTIST.

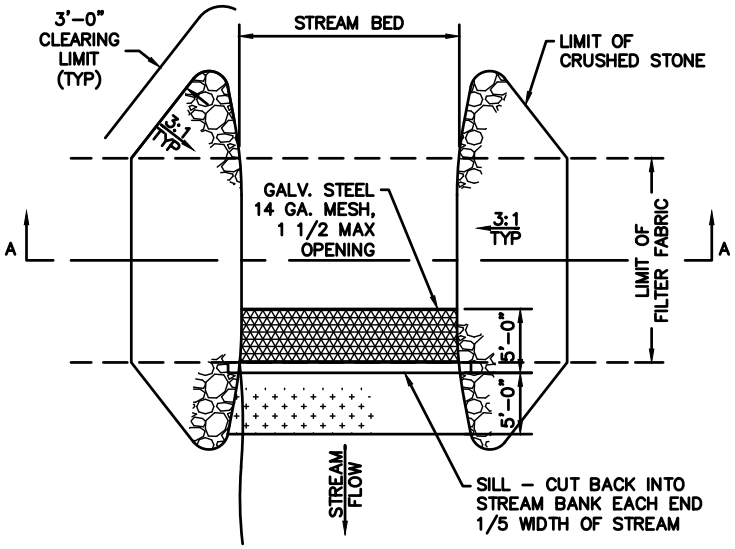
BMP PICTURE

CM-6
CORDUROY ROAD

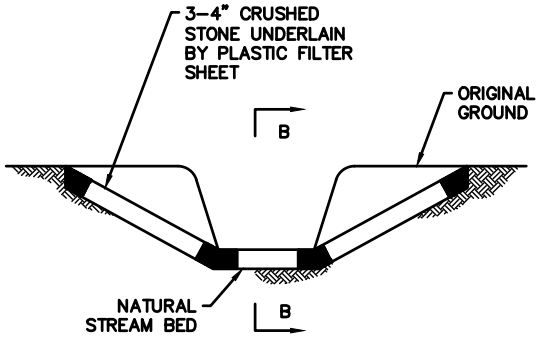
File: Corduroy_Road.dwg

BMP DETAIL

SCALE: NONE



PLAN VIEW



SECTION 'A-A'

BMP PICTURE

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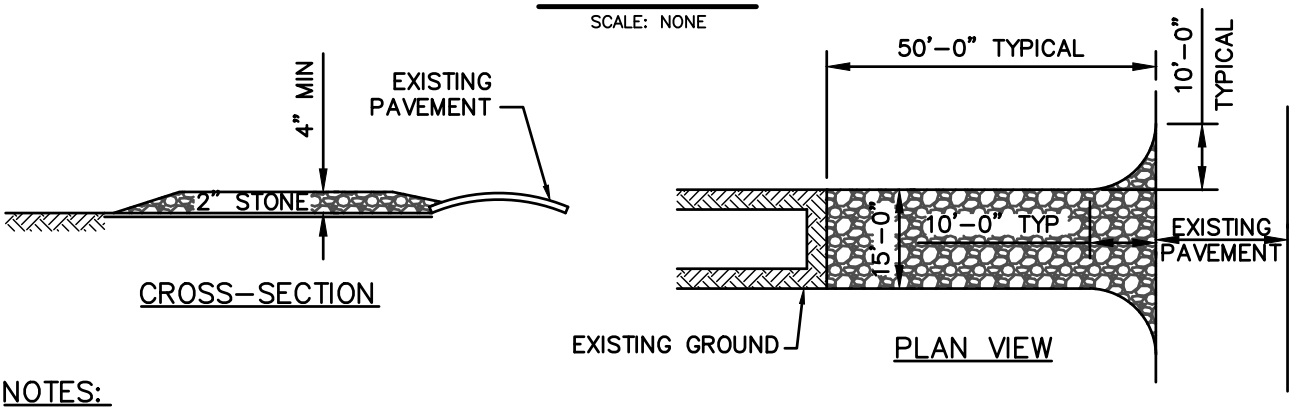
CM-7
ROCK FORD

File: Rock_Ford.dwg

BMP DETAIL

SCALE: NONE



NOTES:

1. STONE SIZE – USE 2" STONE (MINIMUM) TO 6" STONE (MAXIMUM)
2. LENGTH – GREATER THAN OR EQUAL TO 50 FEET
3. THICKNESS – 4"
4. WIDTH – FIFTEEN (15) FOOT TYP., BUT NOT LESS THAN FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS ENTRANCE. IF PIPING IS IMPRACTICAL, MOUNTABLE BERM SHALL BE PERMITTED.
6. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
7. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED.
8. THE CLEAN STONE SHOULD BE INSTALLED OVER A GEOTEXTILE FABRIC. GEOTEXTILE FABRIC MAY BE OMITTED FOR PERMANENT CONSTRUCTION ENTRANCES/EXITS ON A CASE–BY–CASE BASIS WITH THE APPROVAL OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.
9. FOLLOWING CONSTRUCTION, THE CONSTRUCTION ENTRANCE/EXIT SHALL BE REMOVED AND THE AREA GRADED, SEEDED, AND MULCHED AS NEEDED. ENTRANCE/EXITS MAY REMAIN DEPENDING UPON FUTURE ACCESS NEEDS AND/OR PROJECT–SPECIFIC APPROVALS BUT REQUIRES APPROVALS FROM THE NATIONAL GRID ENVIRONMENTAL SCIENTIST AND PROPERTY LEGAL.

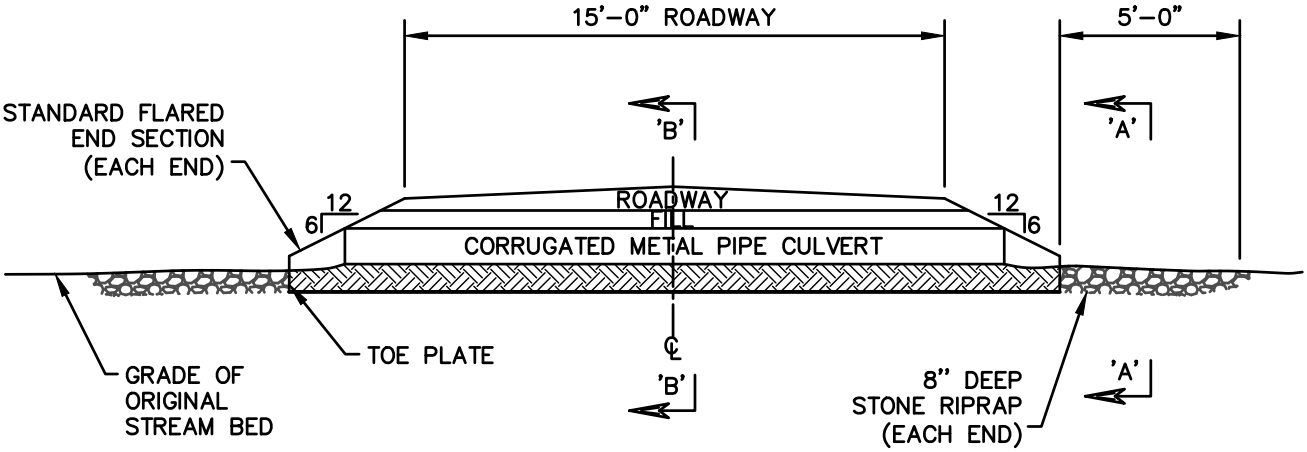
BMP PICTURE

CM-8
TEMPORARY CONSTRUCTION ENTRANCE/ EXIT

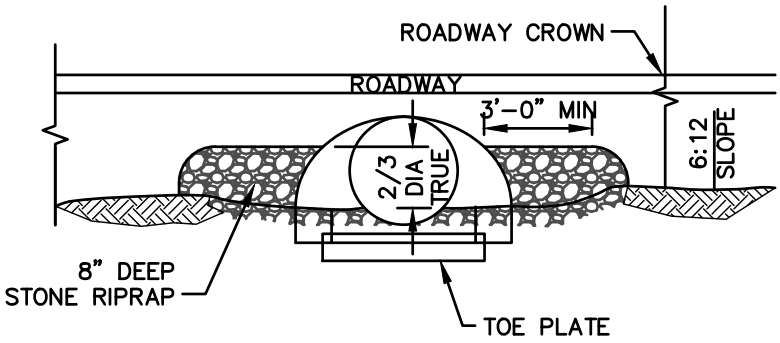
File: Temp_Construction_Ent.dwg

BMP DETAIL

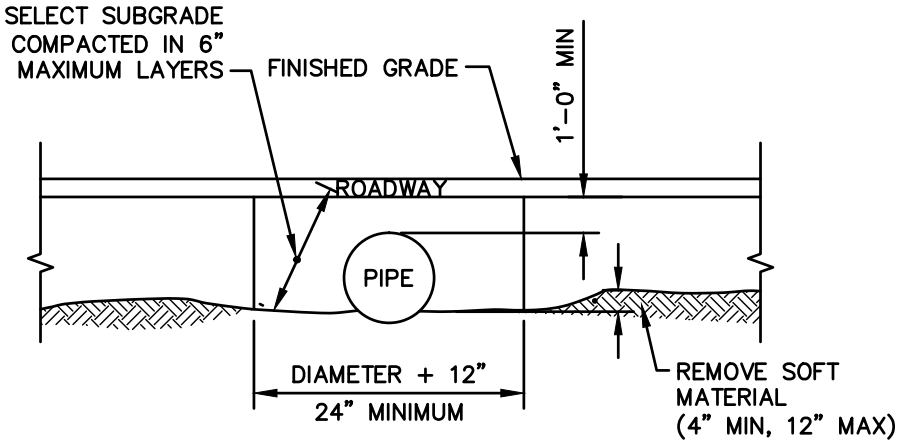
SCALE: NONE



CROSS SECTION



SECTION 'A–A'
(SAME BOTH ENDS)



SECTION 'B–B'

CM-9
TEMPORARY CONSTRUCTION
CULVERT (1 OF 2)

File: Temp_Constr_Culvert.dwg

BMP DETAIL

SCALE: NONE

NOTES:

1. CULVERT DESIGN AND LAYOUT SHALL BE COORDINATED WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST (NGES).
2. CROWN ROADWAY 1/2 INCH PER FOOT.
3. LAY THE CULVERT STRAIGHT AND AS NEARLY AS POSSIBLE ALONG THE EXISTING STREAM BED AND WITH THE INVERTS AT OR SLIGHTLY BELOW BED ELEVATION.
4. CORRUGATED METAL PIPE IS TO BE GALVANIZED STEEL, OR ALUMINIZED STEEL (TYPE 2), WITH BOLTED CONNECTORS.
5. DIAMETERS SHALL BE AS PER THE PROJECT DRAWINGS AND THE SPECIFICATION. THE PIPE GAGE SHALL BE AS FOLLOWS:

DIAMETER (INCHES)	GAGE
12" – 15"	.004"
18" – 24"	.079"
30" – 36"	.109"

6. INSTALLATION OF CULVERTS LARGER THAN 36 INCH DIAMETER SHALL REQUIRE SPECIAL ENGINEERING DESIGN.
7. SELECT SUBGRADE SHALL BE A GRANULAR MATERIAL AS DESCRIBED IN NYSDOT SPECIFICATION ITEM 203–2.02C, OR AS APPROVED BY A NGES.
8. STONE RIPRAP SHALL BE AS DESCRIBED IN NYSDOT SPECIFICATION ITEM 203–2.02D, WITH 8 INCH MAXIMUM SIZE, OR AS APPROVED BY A NGES. EXCEPT WHERE PROTECTED BY STONE, ALL EMBANKMENT SLOPES ARE TO BE STABILIZED, MULCHED AND SEEDED AS PER PROJECT SPECIFICATIONS.
9. OUTLET SHOULD BE CONFIGURED NOT TO CREATE HYDRAULIC JUMP OR PLUNGE POOL.
10. INSTALL EROSION CONTROLS ADJACENT TO THE CULVERT ENDS TO PROTECT THE WATERWAY FROM ROADWAY DEBRIS.

BMP PICTURE

BMP PICTURE

NOTE:

1. PICTURE SHOWS VIEW OF ACCESS WAY STABILIZATION ADJACENT TO A WETLAND.
2. COORDINATE STABILIZATION DESIGN AND PRODUCT WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

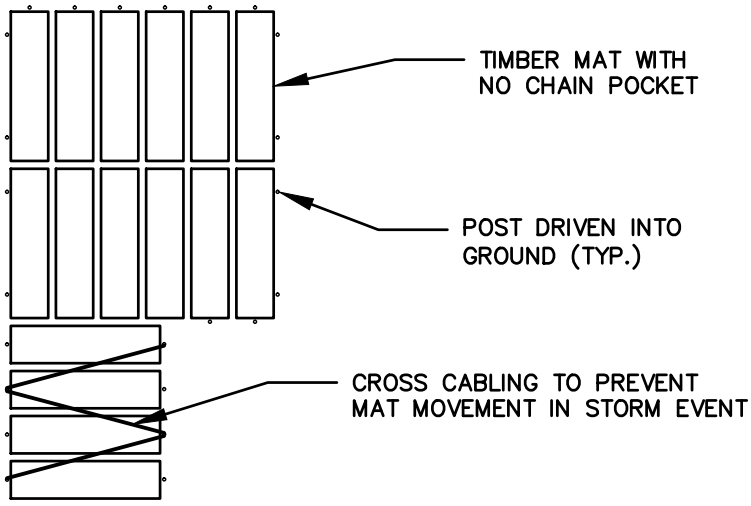

NO ACCESS – WETLAND/STREAM CROSSING MATS REQUIRED

NO ACCESS – A.) PROJECT LIMITS E.G. ROW LIMITS
B.) HISTORICAL/CULTURAL
C.) ENVIRONMENTALLY SENSITIVE E.G. THREATENED & ENDANGERED
D.) OTHER

APPROVED ACCESS

BMP DETAIL 1

SCALE: NONE



TYPICAL PLAN VIEW

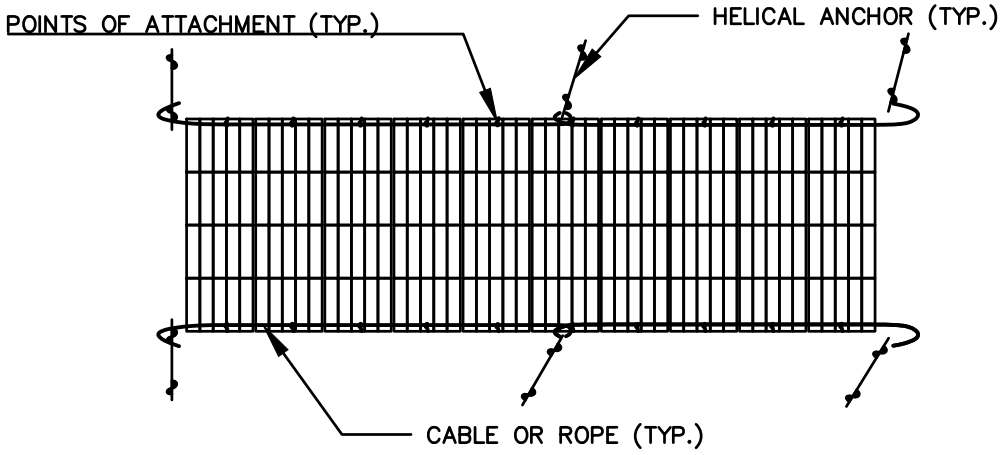
NOTES:

1. EXAMPLES OF ANCHORING ONLY. MATTING CONTRACTOR SHALL PROPOSE THE METHOD OF ANCHORING BASED ON FIELD CONDITIONS.
2. ANCHORING METHOD TO BE APPROVED BY THE NATIONAL GRID ENVIRONMENTAL SCIENTIST AND TRANSMISSION LINE CONSTRUCTION SUPERVISOR.

BMP DETAIL 2

NOTES:

1. TYPICAL HELICAL ANCHOR AND CABLE CONFIGURATION FOR MAT CONTAINMENT IN FLOODPLAINS/LAND SUBJECT TO FLOODING.
2. TYPICAL POINTS OF ATTACHMENT HEAVY STAPLES, EYE BOLTS OR OTHER SUITABLE HARDWARE TO SECURE ATTACHMENT OF MAT TO LINEAR CABLE. IF CHAIN POCKETS ARE PRESENT IN THE MATS CABLE OR ROPE CAN BE LOOPED THROUGH RODS.



BMP PICTURE 1

BMP PICTURE 2

CM-12
EXAMPLE OF CONSTRUCTION MAT ANCHORING (2 OF 2)

File: Const_Mat_Anchoring.dwg

BMP DETAIL

SCALE: NONE

WIRE BACKED SILT FENCE

MUTUAL INDUSTRIES WIRE BACKED SILT FENCE
PART # 1776-14-24
36" X 100'
36" MISF 1776 FABRIC
24" 14GA WIRE MESH
OPENING OF MESH 2" X 4"
FABRIC HOG RINGED EVERY 12"-18" ALONG THE TOP OF THE FENCE

ROLL WEIGHT 40 LBS

32 ROLLS PER PALLET

NOTES:

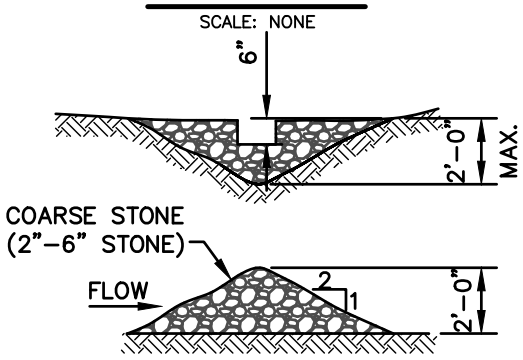
1. PRODUCT TO BE MUTUAL INDUSTRIES' WIRE BACKED SILT FENCE OR APPROVED EQUAL BY NATIONAL ENVIRONMENTAL SCIENTIST.
2. COORDINATE INSTALLATION METHOD AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

NOTE:

1. PICTURE SHOWS SEDIMENT FILTER WITHIN A WETLAND.

BMP DETAIL



STONE CHECK DAM

NOTES:

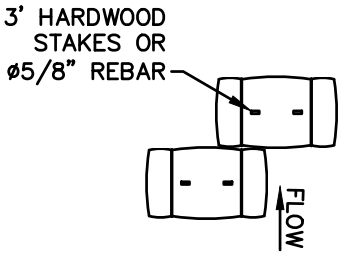
1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. THE CENTER OF THE CHECK DAM MUST BE AT LEAST 6" LOWER THAN THE OUTER EDGES.
4. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
5. MAX. SPACING: TOE OF THE UPSTREAM DAM IS SAME ELEVATION AS TOP OF DOWNSTREAM DAM.
6. STONE SHALL BE FREE OF FINE PARTICLES TO PREVENT TURBID DISCHARGES.

BMP PICTURE

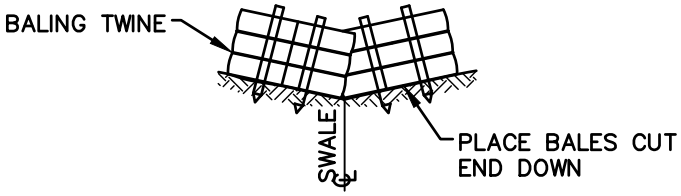
NOTE: A SMALLER STONE SIZE IS SHOWN IN THIS PICTURE.

BMP DETAIL

SCALE: NONE



PLAN VIEW



SECTION VIEW

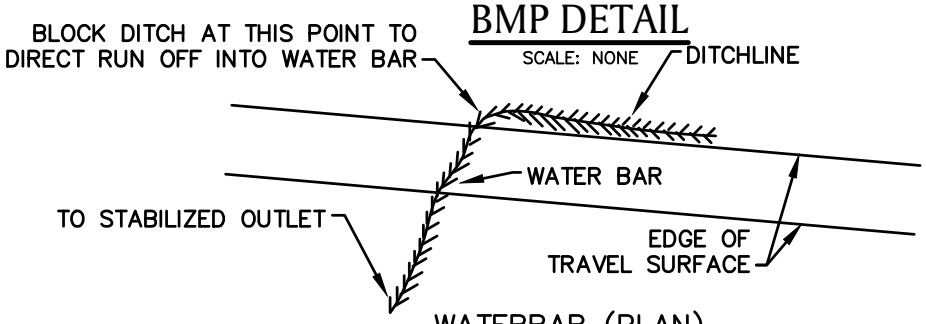
NOTES:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

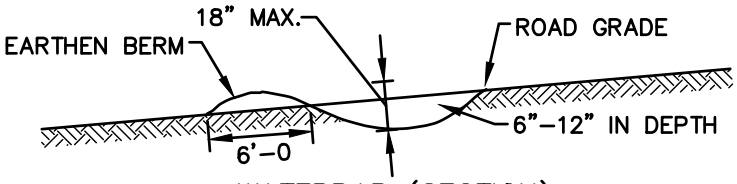
BMP PICTURE

BMP DETAIL

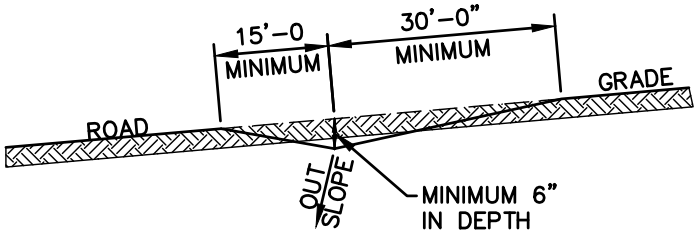
SCALE: NONE



WATERBAR (PLAN)



WATERBAR (SECTION)



DISCHARGE (SECTION)

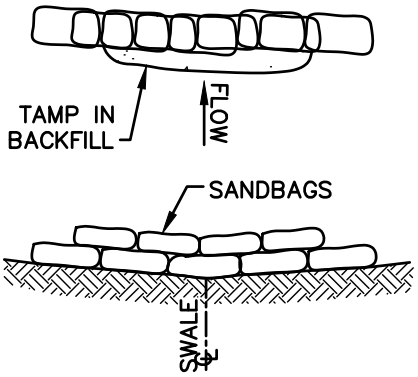
NOTE:

1. LINE WITH 2"–6" STONE UNDERLAIN BY GEOTEXTILE FILTER FABRIC, KEYED INTO ROAD SURFACE AT LEAST 10 FEET EACH SIDE OF WATERBAR.
2. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

BMP DETAIL

SCALE: NONE



SANDBAG CHECK DAM

NOTES:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

NOTE:

1. PICTURE DOES NOT DEPICT "TAMP IN BACKFILL"

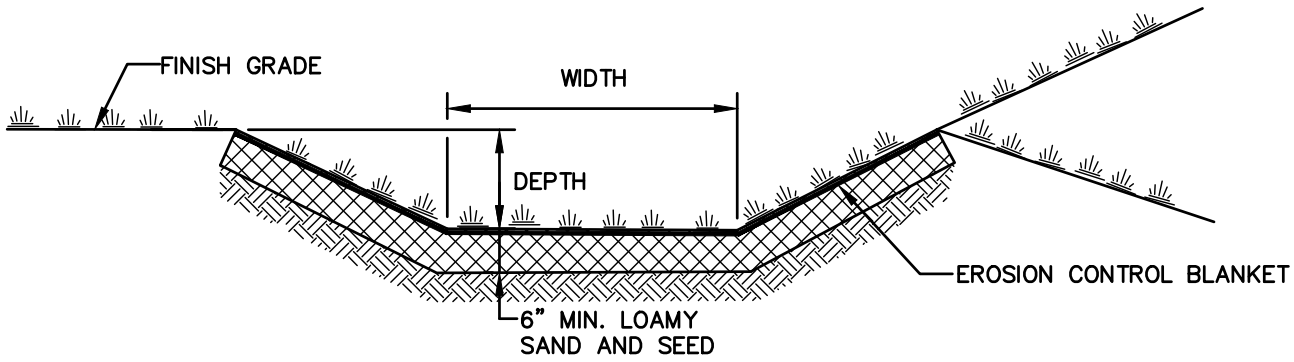
BMP PICTURE

NOTE:

1. EXACT SIZE, LOCATION AND DESIGN IS DEPENDANT ON SITE CONDITIONS, AND LOCAL AND STATE REGULATIONS. COORDINATE THIS BMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.

BMP DETAIL

SCALE: NONE



NOTES:

1. WIDTH AND DEPTH OF SWALE, AND EROSION CONTROL BLANKET TYPE TO BE COORDINATED WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. REFER TO DETAILS SEC–10 AND SEC–11 FOR SEED MIXTURE OPTIONS.

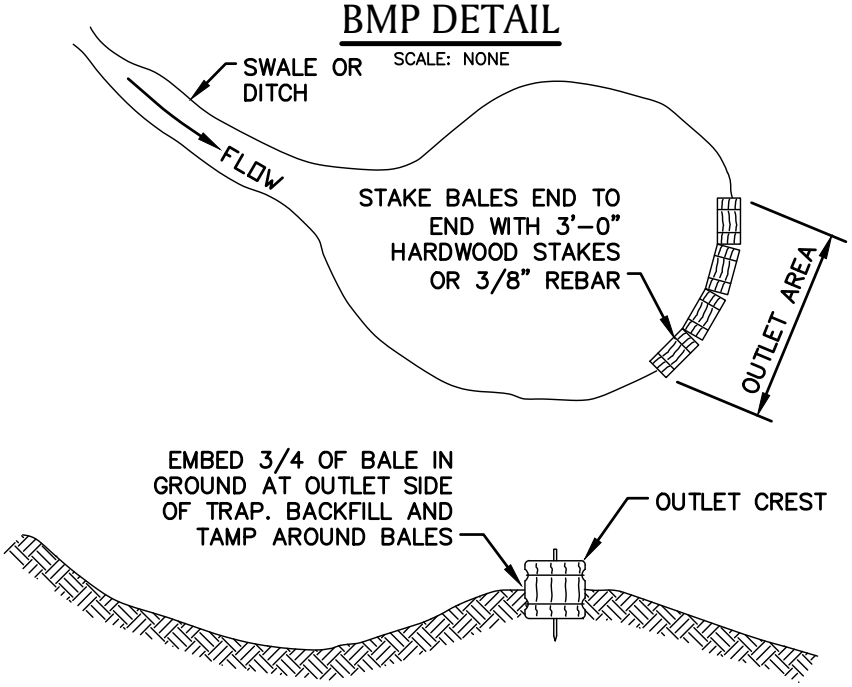
BMP PICTURE

AA-8
DRAINAGE SWALE AND
LINED DITCH

File: Lined_Drainage_Swale.dwg

BMP DETAIL

SCALE: NONE



TYPICAL PROFILE

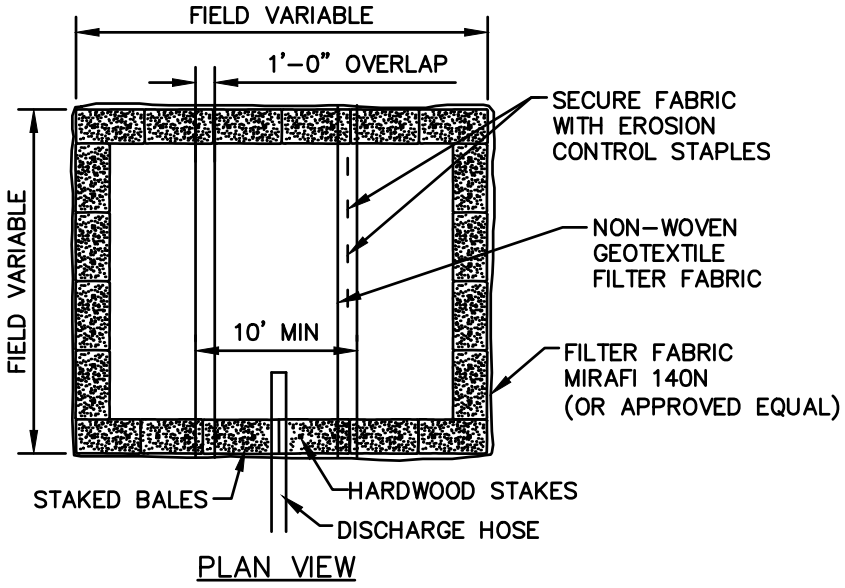
NOTES

1. SIZE, SHAPE AND PROFILE OF SEDIMENT WILL VARY ACCORDING TO ANTICIPATED FLOW VOLUME AND SURROUNDING TERRAIN AND SHALL BE COORDIANTED WITH THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE BASIN SHALL BE CUT BELOW THE GROUNDLINE. FILL SHALL NOT BE USED TO HOLD WATER UNLESS ROLLED AND COMPACTED.
3. OUTLET AREA IS TO REMAIN FREE OF EXCAVATION SPOILS.
4. OUTLET CREST ELEVATION SHALL BE LOWER THAN INLET ELEVATION AND AT LEAST 1'–0" BELOW THE TOP OF THE BASIN.ARMOUR SLOPES >8% IN OUTLET AREA WITH STONE OF APPROPRIATE SIZE TO PREVENT SCOUR.
5. ARMOUR SLOPES >8% IN OUTLET AREA WITH STONE OF APPROPRIATE SIZE TO PREVENT SCOUR.

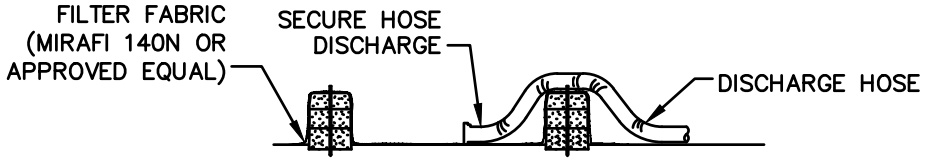
BMP PICTURE

BMP DETAIL

SCALE: NONE



PLAN VIEW



CROSS–SECTION

NOTES:

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS,
2. THE BASIN TO BE SIZED TO PREVENT DISCHARGE WATER FROM OVERTOPPING BASIN.
3. KEEP AS FAR FROM WETLANDS AS PRACTICAL.
4. CLEAN AND REMOVE AS SOON AS DEWATERING IS COMPLETE.

BMP PICTURE

AA-10
DEWATERING BASIN
(SMALL SCALE)

File: Dewat_Bas_Small.dwg

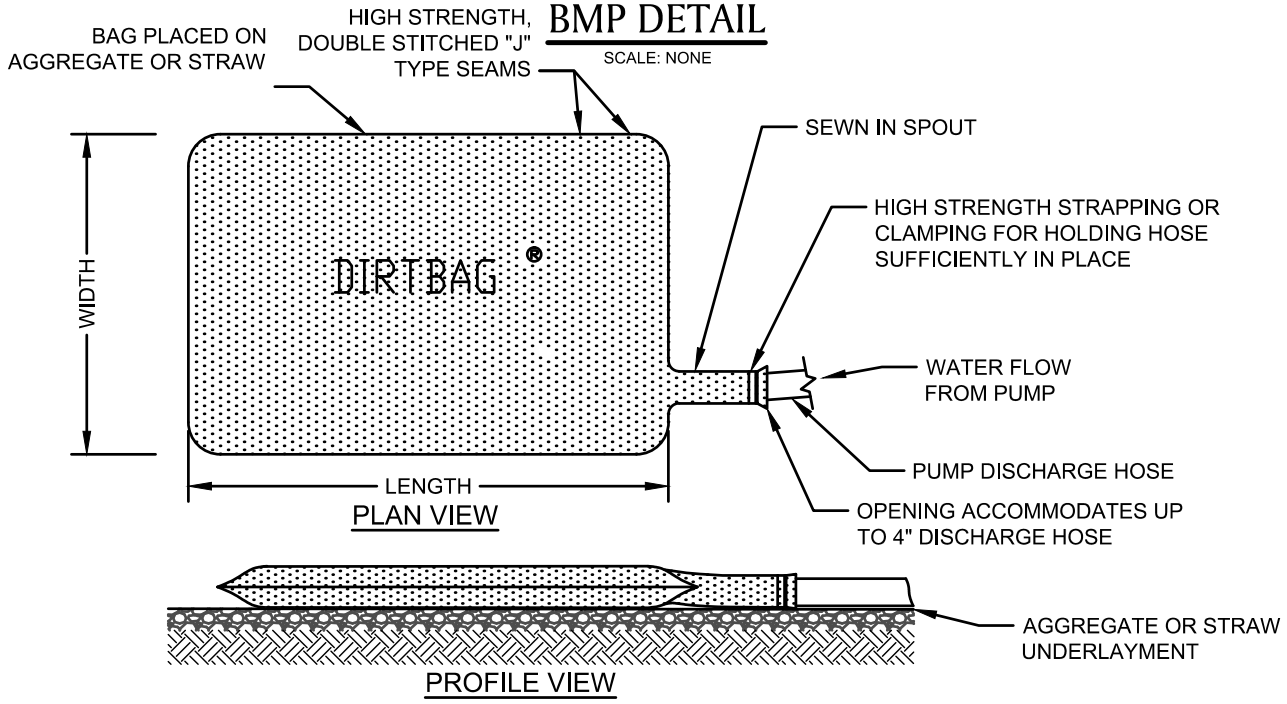
BMP PICTURE

NOTE:

1. EXACT SIZE, LOCATION AND DESIGN IS DEPENDANT ON SITE CONDITIONS, AND LOCAL AND STATE REGULATIONS. COORDINATE THIS BMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.

BMP DETAIL

SCALE: NONE



NOTE:
ONCE PUMPING COMMENCES, THE DIRT BAG SHALL BE MONITORED FREQUENTLY TO ASSURE THAT THE CONNECTIONS ARE SECURELY FASTENED AND THE RATE OF WATER DELIVERY TO THE STRUCTURE IS LOW ENOUGH TO PREVENT UNFILTERED WATER FROM FLOWING FROM THE HOSE CONNECTIONS OR BAG.

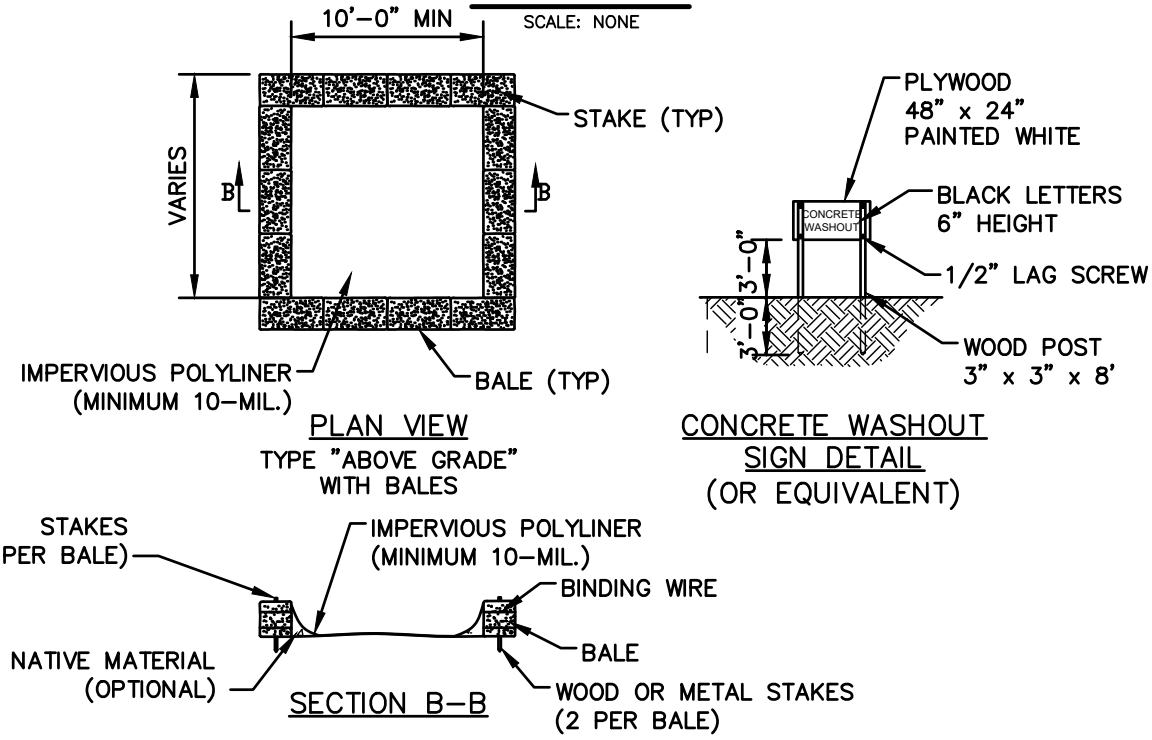
BMP PICTURE

* PICTURE AND DETAIL PROVIDED BY ACF ENVIRONMENTAL

AA-12
DIRTBAG *

File: Dirtbag.dwg

BMP DETAIL



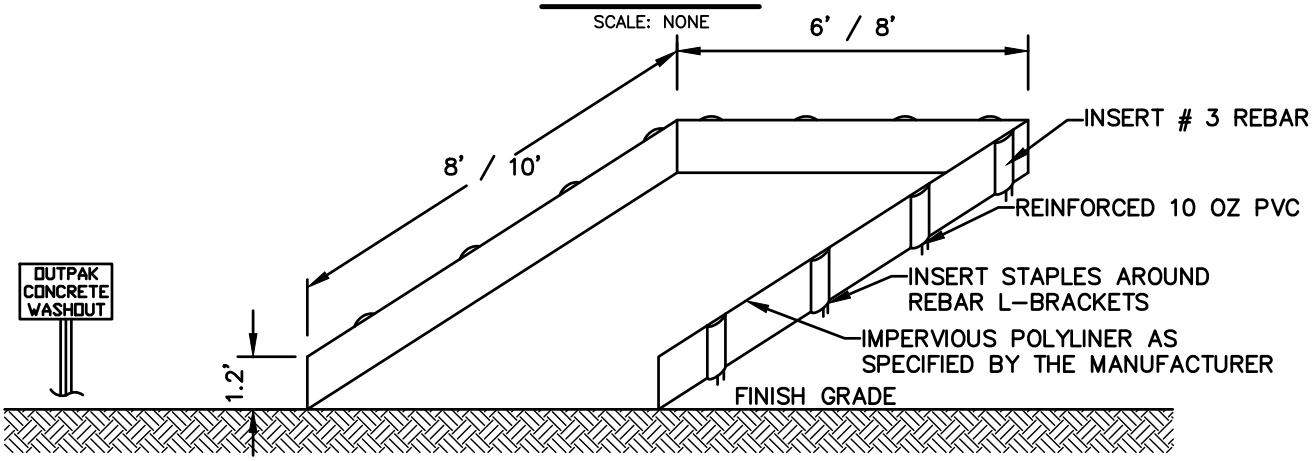
NOTES:

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS. COORDINATE SIZE AND LOCATION OF CONCRETE WASTE SUMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. KEEP AS FAR FROM DRAINAGE CHANNELS AND WETLAND AREAS AS PRACTICAL.
3. SUMPS TO BE CLEANED AND WASTE CONCRETE REMOVED AND PROPERLY DISPOSED OF UPON COMPLETION OF WORK.
4. SEE ADDITIONAL NOTES ON DETAIL AA–14.

BMP PICTURE

BMP DETAIL

SCALE: NONE



CROSS SECTION

NOTES:

1. PRODUCT TO BE OUTPAK PVC CONCRETE WASHOUT OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT.
3. SIGNS SHALL BE PLACED AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT.
4. THE CONCRETE WASHOUT AREA WILL BE REPLACED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTE CONCRETE AND OTHER LIQUID WASTE.
5. WASHOUT RESIDUE SHALL BE REMOVED FROM THE SITE AND DISPENSED OF AT AN APPROVED WASTE SITE.
6. DO NOT MIX EXCESS AMOUNTS OF FRESH CONCRETE OR CEMENT ON-SITE.
7. DO NOT WASH OUT CONCRETE TRUCKS INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS.
8. AVOID DUMPING EXCESS CONCRETE IN NON-DESIGNATED DUMPING AREAS.
9. LOCATE WASHOUT AREA AT LEAST 50' FROM STORM DRAIN, OPEN DITCHES, OR WATERBODIES. COORDINATE LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
10. WASH OUT WASTES INTO THE OUTPAK WASHOUT WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND THEN DISPOSED OF PROPERLY.
11. A SECURE, NON-COLLAPSING, NON-WATER COLLECTING COVER MUST BE PLACED OVER CONCRETE WASHOUT PRIOR TO PREDICTED WET WEATHER TO PREVENT ACCUMULATION AND OVERFLOW OF PRECIPITATION.

BMP PICTURE

*** PICTURE AND DETAIL PROVIDED BY OUTPAK WASHOUT**
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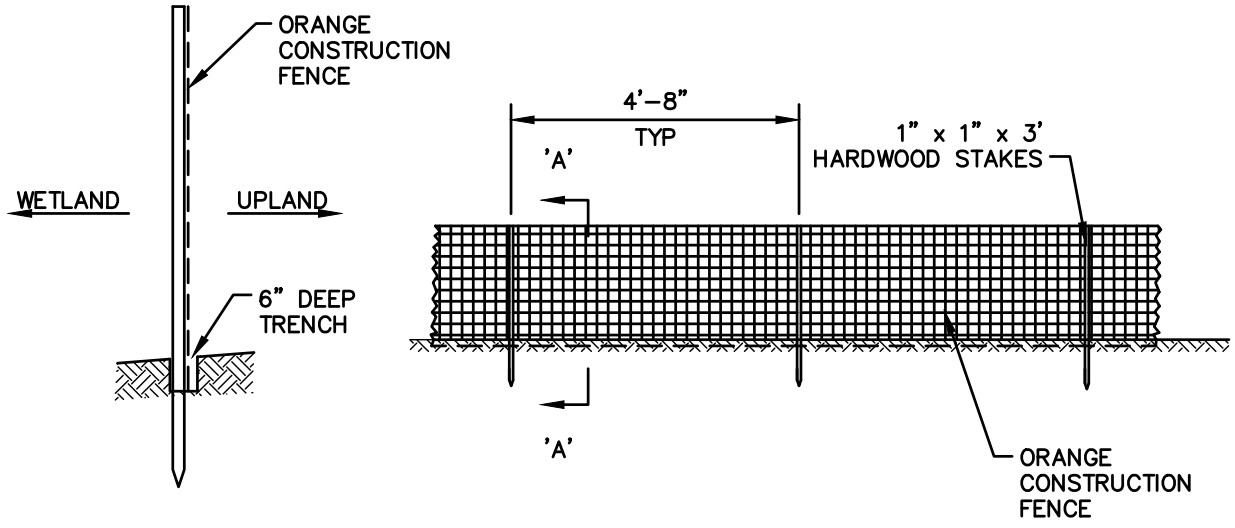
AA-14
OUTPAK CONCRETE WASHOUT *

File: Outpak_Washout.dwg

BMP DETAIL

SCALE: NONE



SECTION A-A

BMP PICTURE

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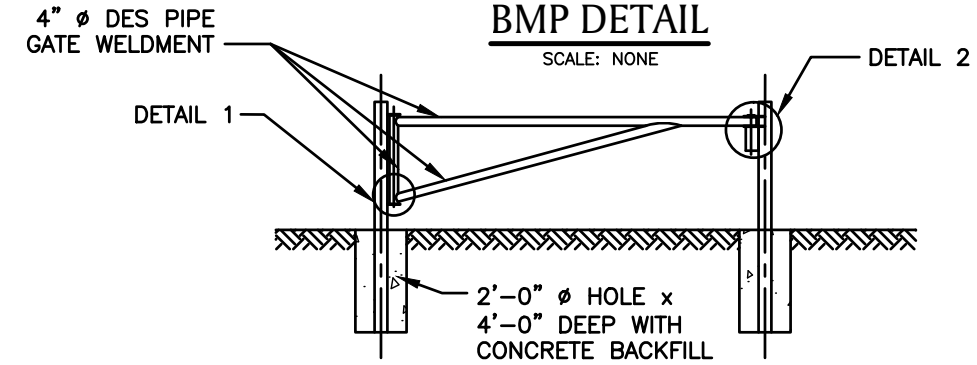
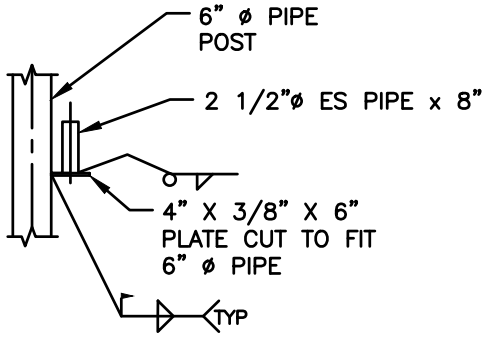
AA-15
BARRIER FENCE
(CONSTRUCTION FENCE)

File: Barrier_Fence.dwg

BMP DETAIL

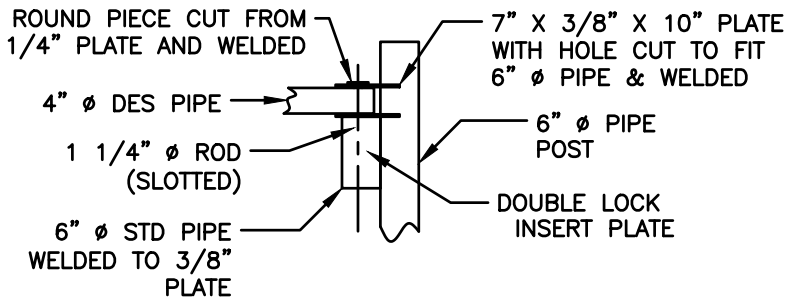
SCALE: NONE





DETAIL 1

SIMILAR DETAIL AT TOP



DETAIL 2

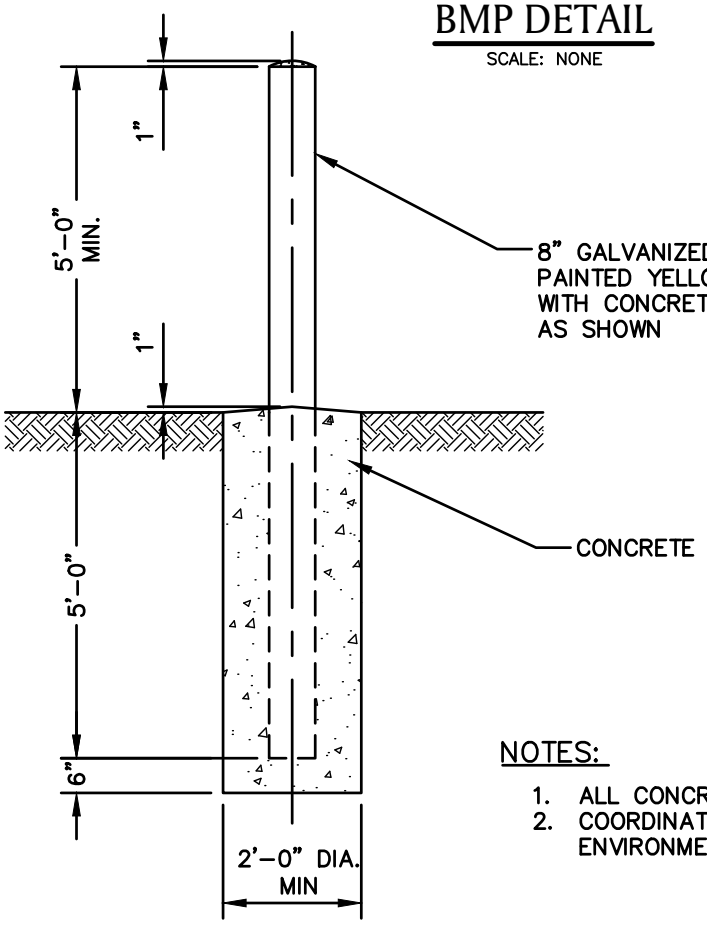
NOTES:

1. ALL GATE STEEL PIPES SHALL BE IN ACCORDANCE WITH ASTM A–501, PLATES SHALL BE ASTM A–36.
2. ALL STEEL PIPES SHALL BE PRIMED WITH ZINC–CHROMATE PRIMER AND FINISHED WITH AN APPROVED OSHA "SAFETY YELLOW" TOP COAT COMPATIBLE WITH THE PRIMER AND FOR EXTERIOR EXPOSURE.
3. REFLECTORS SHALL BE SPACED AT 3 FEET ALONG THE LENGTH OF THE CROSSBAR AND BRACE
4. BACKFILL AT POSTS TO BE COMPACTED.

BMP PICTURE

BMP DETAIL

SCALE: NONE



NOTES:

1. ALL CONCRETE TO BE 2500 P.S.I. MINIMUM.
2. COORDINATE LOCATIONS WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

BMP

Definition

The control of dust resulting from land-disturbing activities.

Purpose

To prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the local permitting authority.

Construction Specifications

A. Non-driving Areas – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. Driving Areas – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access routes.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

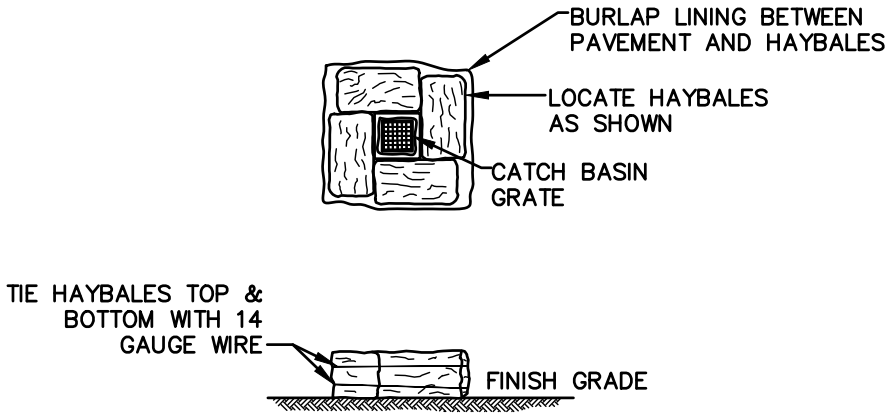
Barriers – Woven geotextiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

* BMP INFORMATION FROM "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (AUGUST, 2005)." INFORMATION OBTAINED VIA WEBSITE: http://www.dec.ny.gov/chemical/29066.html

BMP DETAIL

SCALE: NONE



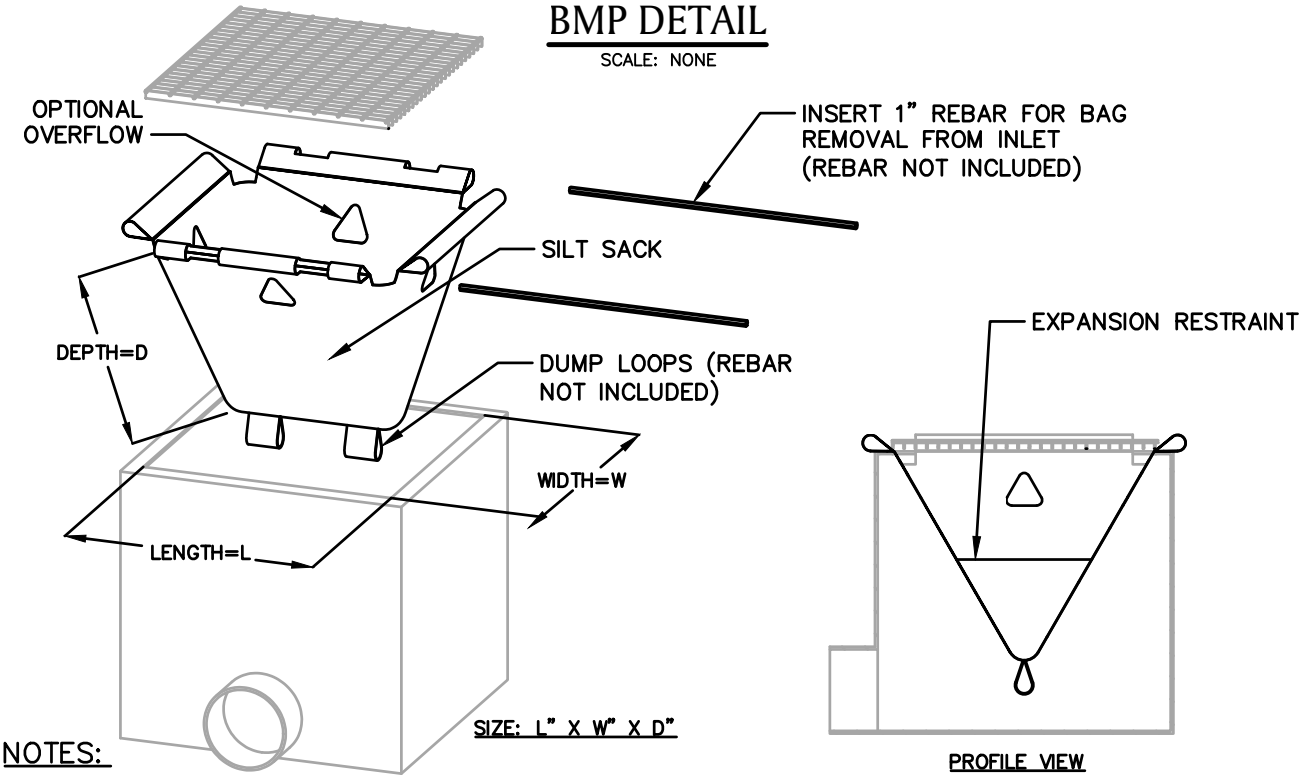
NOTES:

1. SURROUND STREET DRAINAGE STRUCTURE INLET WITH HAY BALES PRIOR TO CONSTRUCTION AND MAINTAIN UNTIL CONSTRUCTION IS COMPLETED. ACCUMULATED SEDIMENTS SHALL BE REMOVED.
2. HAYBALES PLACED ON PAVEMENT SHALL HAVE BURLAP PLACED BETWEEN PAVEMENT AND HAYBALE

BMP PICTURE

BMP DETAIL

SCALE: NONE



NOTES:

1. PRODUCT TO BE SILT SACK OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE USE OF A SILT SACK OPTIONAL OVERFLOW AND OVERALL DIMENSIONS ARE TO BE COORDINATED WITH A NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

*** DETAIL PROVIDED BY ACF ENVIRONMENTAL**

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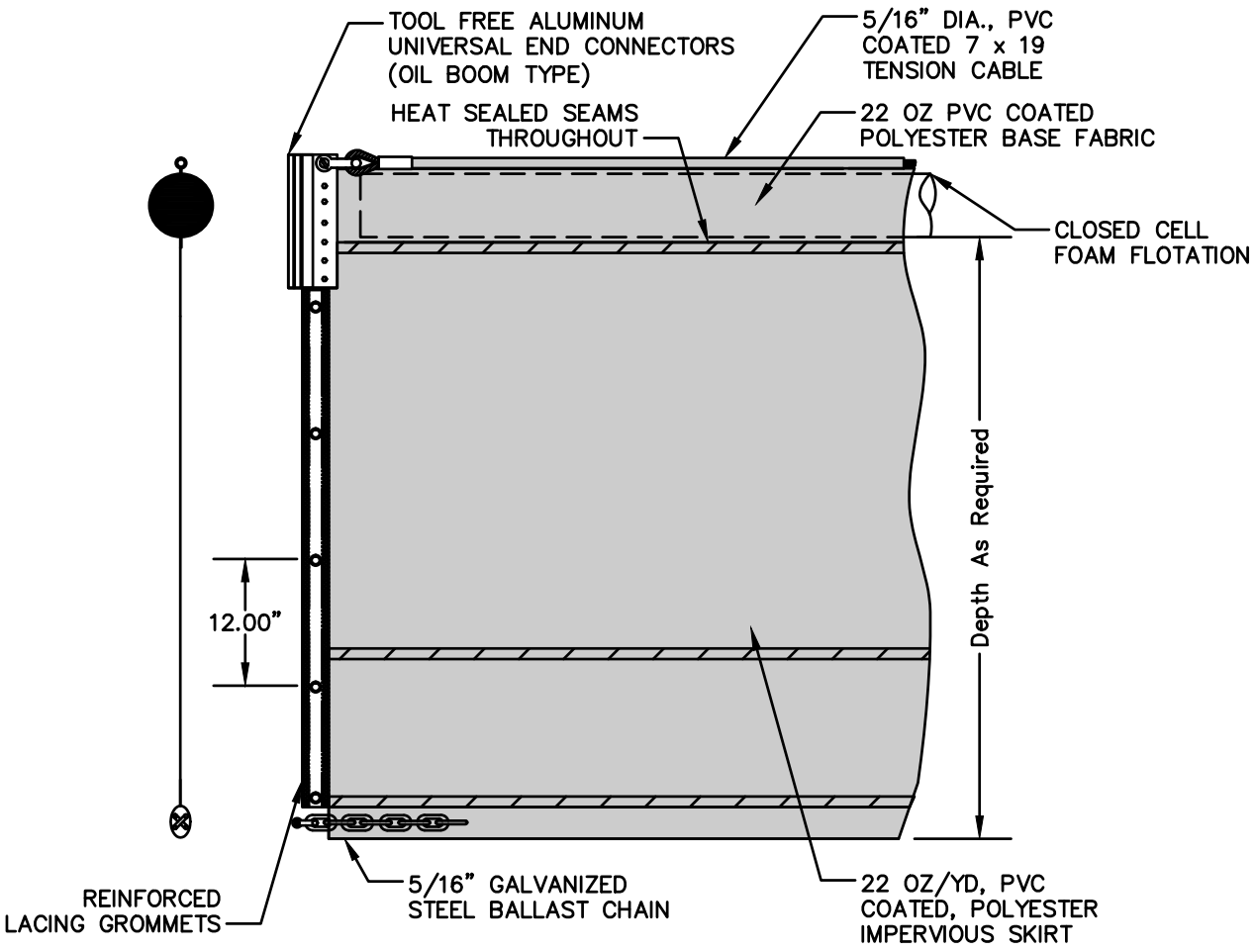
AA-20
SILT SACK *

File: SILT SACK.dwg

BMP DETAIL

SCALE: NONE



BMP PICTURE

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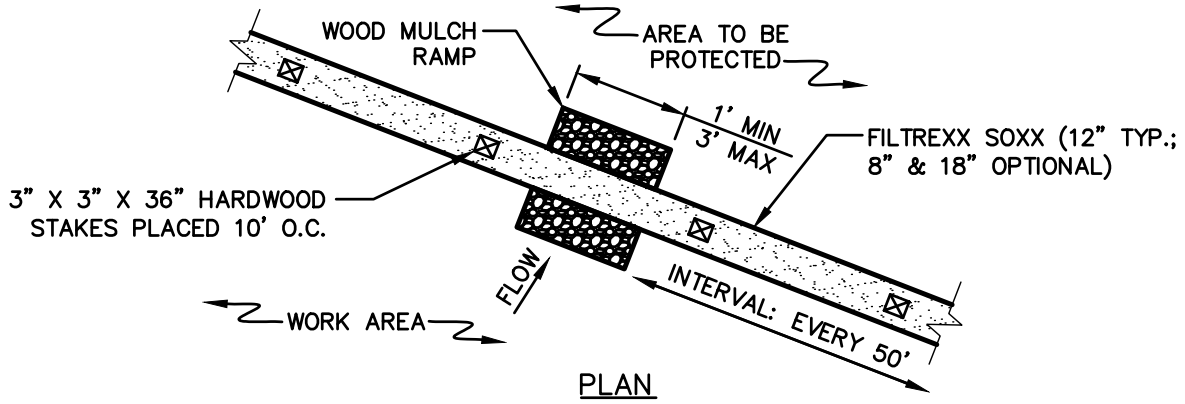
AA-21
TURBIDITY CURTAIN *

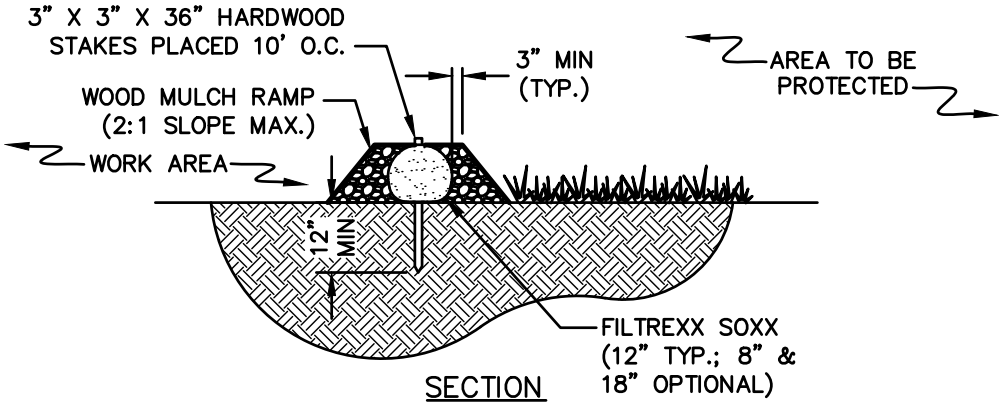
File: Turbidity_Curtain.dwg

BMP DETAIL

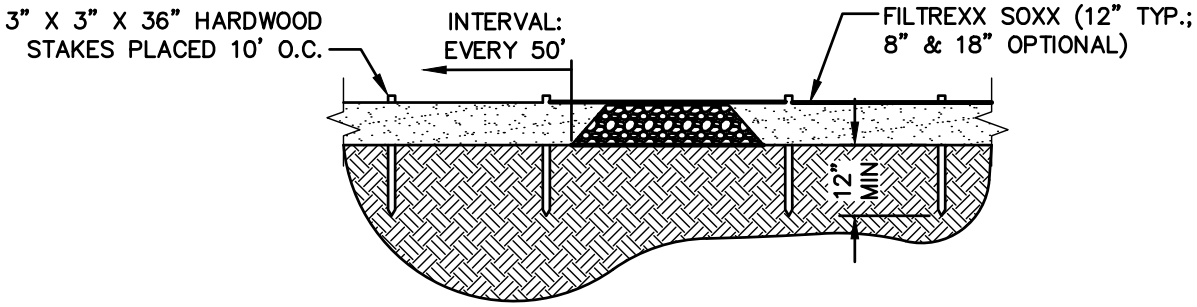
SCALE: NONE



PLAN



SECTION



PROFILE

NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. NON-MONOFILAMENT CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" – 1/4".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPOSED OF ON-SITE, OR IN ACCORDANCE WITH ENVIRONMENTAL PERMITS AS APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
7. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP # AA-22
SILTSOXX AMPHIBIAN & REPTILE CROSSING #1 (1 OF 2)

File: Alternate_Mulch_Ramp_Siltsoxx.dwg

BMP PICTURE

SALAMANDER AND SNAKE CROSSING #1

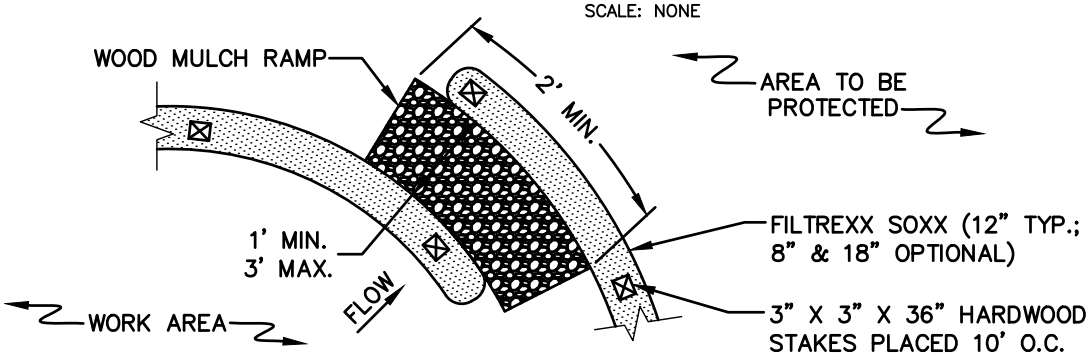
ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

1. SILTSOXX, BY FILTREX INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.

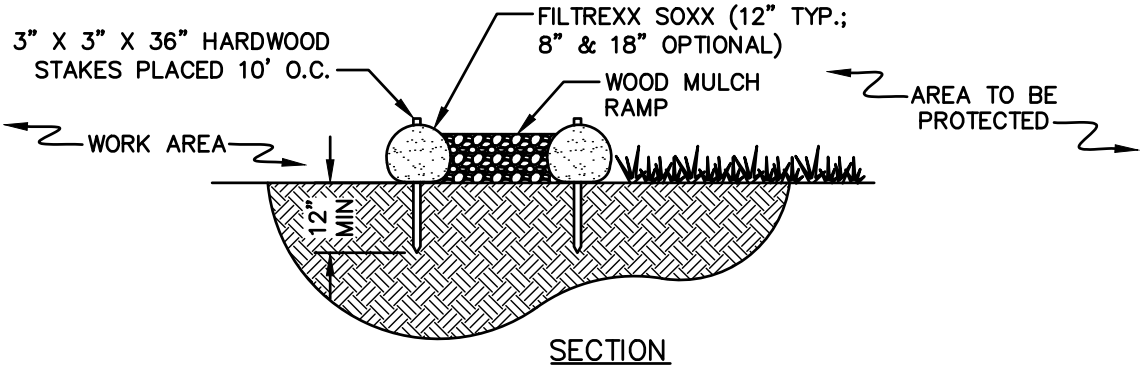
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS, OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP DETAIL

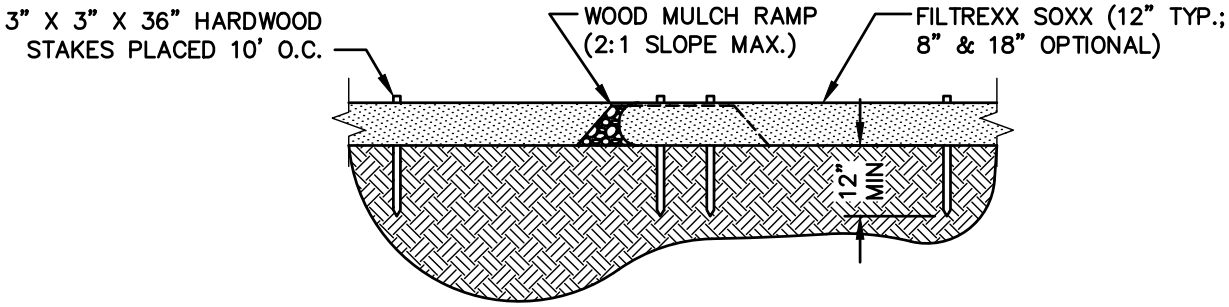
SCALE: NONE



PLAN



SECTION



PROFILE

NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. NON-MONOFILAMENT CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" – 1/4".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPOSED OF ON-SITE, OR IN ACCORDANCE WITH ENVIRONMENTAL PERMITS AS APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
7. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
8. GAPS TO BE SPACED EVERY 50 FT, IF POSSIBLE GIVEN WETLAND PERMIT CONDITIONS.

BMP # AA-23
SILTSOXX AMPHIBIAN & REPTILE CROSSING #2 (1 OF 2)

File: Alternate_Siltsoxx.dwg

BMP PICTURE

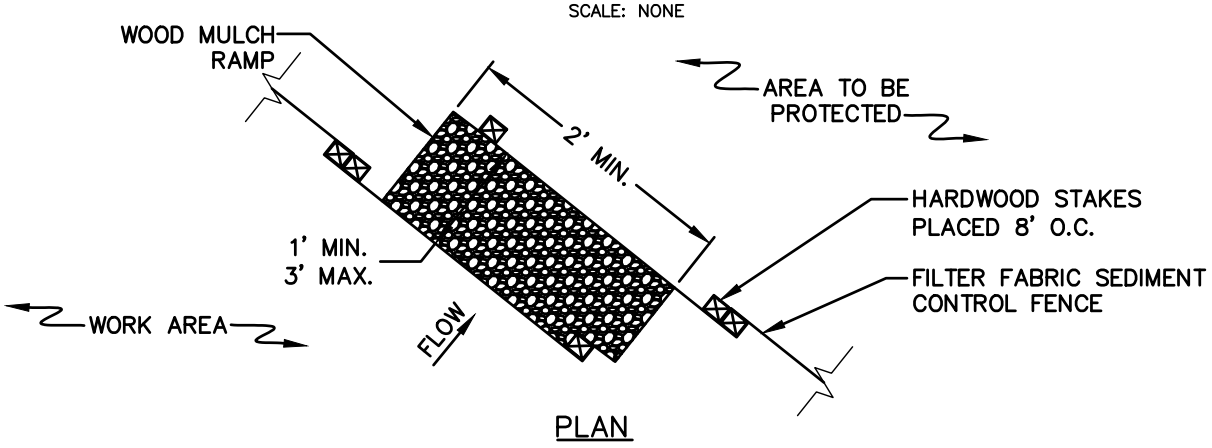
SILTSOXX AMPHIBIAN & REPTILE CROSSING #2

ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

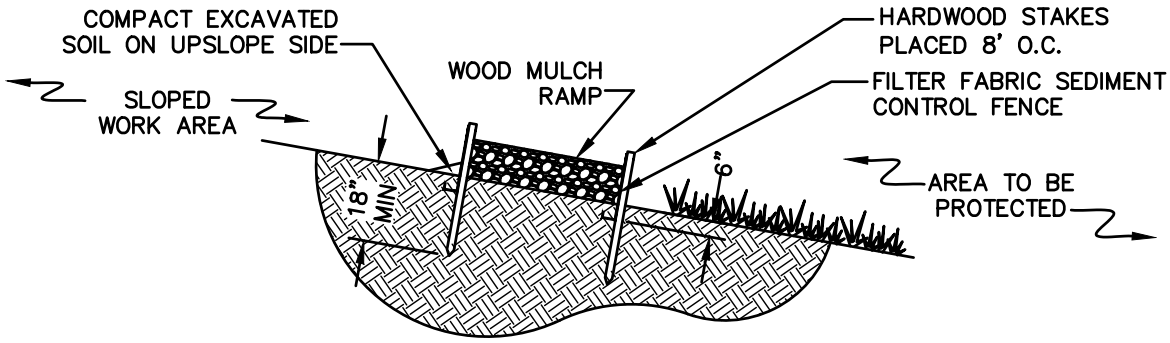
1. SILTSOXX, BY FILTREX INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP DETAIL

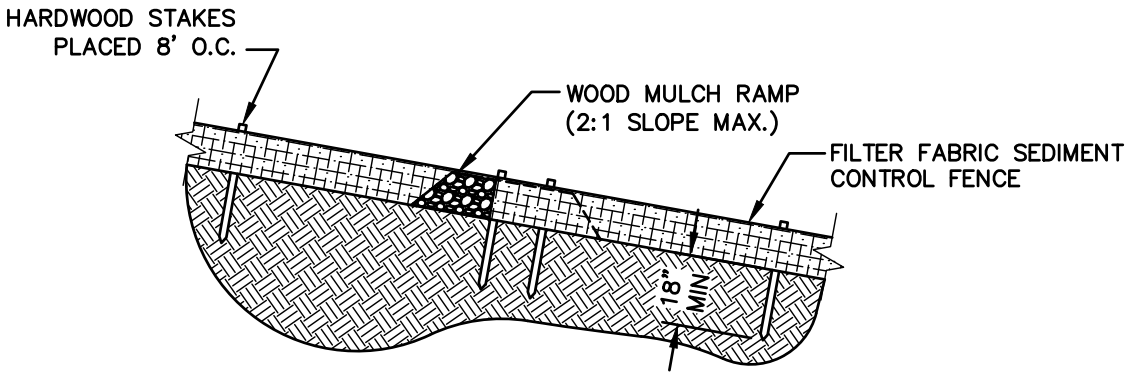
SCALE: NONE



PLAN



SECTION



PROFILE

NOTES

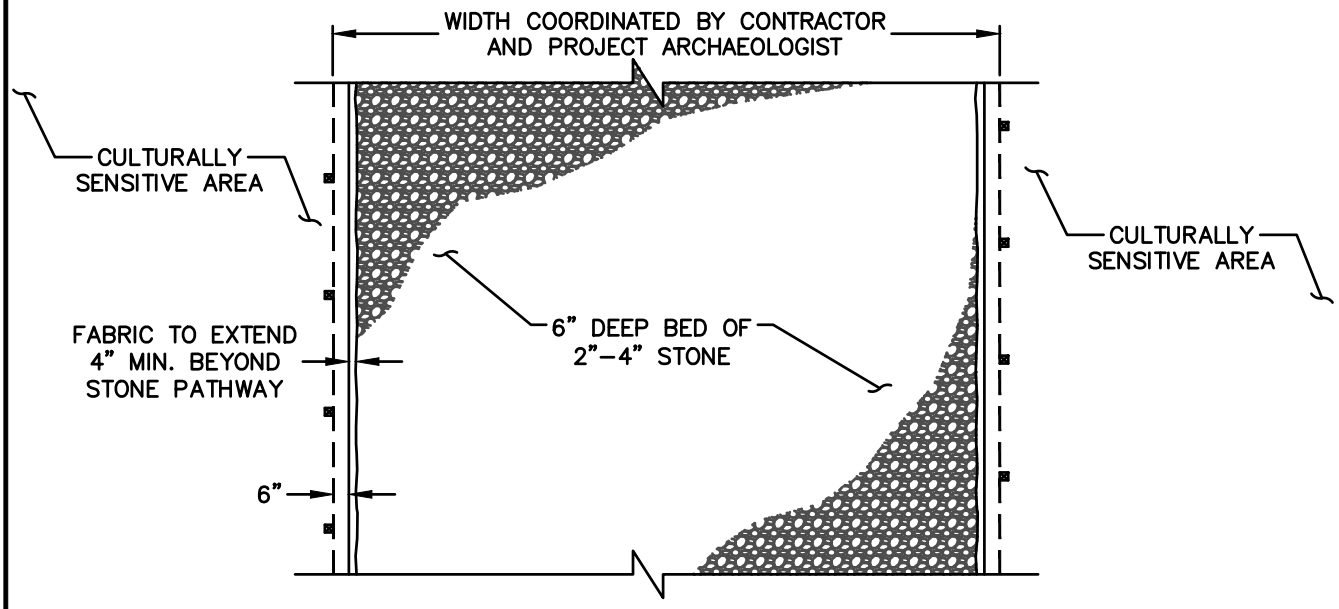
1. IN AREAS WHERE SLOPES OR RUN-OFF VOLUME PROHIBIT USE OF SILTSOXX, CROSSINGS CAN BE PROVIDED THROUGH TRENCHED SILT FENCE.
2. INTALL SILT FENCE TO SPECIFICATIONS IN EG303 APPENDIX 7 "SEC-2 SEDIMENT CONTROL FENCE."
3. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
4. GAPS TO BE SPACED EVERY 50 FT, IF POSSIBLE GIVEN WETLAND PERMIT CONDITIONS.

BMP # AA-24
SILT FENCE AMPHIBIAN & REPTILE CROSSING #3

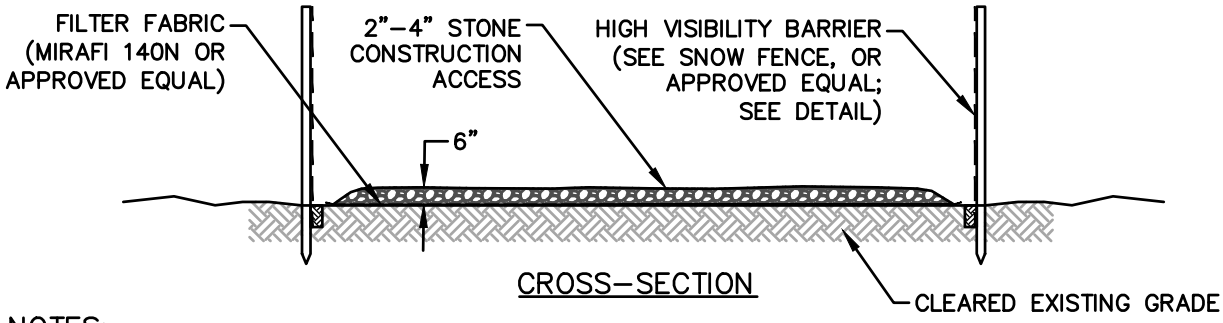
File: Alternate_Siltsoxx.dwg

BMP DETAIL

SCALE: NONE



PLAN VIEW



CROSS–SECTION

NOTES:

1. ARCHAEOLOGICAL SITE BOUNDARIES, AS DEFINED BY INTENSIVE ARCHAEOLOGICAL SURVEY AND SITE AVOIDANCE AND PROTECTION PLANS, WILL BE DEMARCATED BY STAKING BY THE PROJECT ARCHAEOLOGIST.
2. GEOTEXTILE AND STONE MAY REMAIN IN PLACE FOLLOWING CONSTRUCTION IF PERMANENT PROTECTION IS NECESSARY AND DEPENDENT ON EASEMENT RIGHTS.
3. WHERE APPROVED BY THE PROJECT–SPECIFIC SAPP, CONSTRUCTION MATTING MAY BE ADDED OVER, OR IN PLACE OF, THE FABRIC AND STONE.
4. INSTALLATION AND REMOVAL OF FABRIC AND STONE, EROSION CONTROLS, AND/OR CONSTRUCTION MATTING WILL BE MONITORED BY THE PROJECT ARCHAEOLOGIST AT EACH LOCATION(S).
5. INSTALLATION OF THESE MEASURES WILL BE CONDUCTED WITH LOW–GROUND PRESSURE VEHICLES WHERE FEASIBLE.
6. WHERE REQUIRED BY THE PROJECT–SPECIFIC SAPP, TEMPORARY, HIGH VISIBILITY PROTECTIVE FENCING (E.G., SNOW FENCE OR PLASTIC FENCE) WILL BE ERECTED ALONG THE SITE BOUNDARIES OUTSIDE OF THE WORKSPACE WITHIN THE ROW IN ORDER TO PREVENT VEHICLES FROM TRAVELING THROUGH THOSE SITE AREAS DURING CONSTRUCTION. THE PROTECTIVE FENCE WILL BE POSTED WITH "NO TRESPASSING" SIGNS, SO THAT THE SITES CAN BE AVOIDED BY ALL CONSTRUCTION RELATED ACTIVITIES. THE FENCING WILL BE REMOVED UPON COMPLETION OF THE PROJECT. THE INSTALLATION AND REMOVAL OF FENCING WILL BE MONITORED BY THE PROJECT ARCHAEOLOGIST.

BMP PICTURES

APPENDIX 5
CERTIFICATION FORM FOR INVASIVE SPECIES CONTROL

Certain permit conditions, therefore a Condition of Contracts for the Prime Contractor, any Subcontractors, and any equipment or mat vendors for ***National Grid Projects*** shall be required to Certify their equipment[7] {each piece of equipment used on site} as 'clean'[8].

_____ (*name of firm*) hereby Certifies that

_____ (*make, model, and/or type*)

_____ (*equipment ID tag or #)* meets the following

1. before entry on to the job site, has been sufficiently cleaned to remove all accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species; and

2. that the above piece of equipment has neither been off-loaded nor operated in the interval between cleaning and delivery to the jobsite.

3. that equipment deployed in areas of invasive species (as identified in project plans) shall be cleaned prior to redeployment.

_____ (*signed*) _____ (*dated*)

_____ (*printed name*) _____ (*title*)

_____ (*Firm*)

The signed original of this form {one for each piece of equipment (or lot[9] of mats)} is to be given to the NG Construction Supervisor assigned to the project.

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7 Equipment may include, but is not limited to bulldozers, excavators, backhoes, bucket trucks (tracked or wheeled), pulling equipment, concrete trucks, compressors, drilling equipment, and mats (composite, wood, or other materials).

8 With regard to invasive species, the definition of clean means free of accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species.

9 Lot of mats is the number of mats that may be transported by one forwarder/truck at a time.

Appendix 6 – Snow Disposal Guidelines

See EG303NE_App6 published separately

Appendix D: Cultural Resource Correspondence

Public Archaeology Laboratory

May 14, 2024

Brona Simon
State Archaeologist
State Historic Preservation Officer and Executive Director
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125

Re: NEP Lines 313/343 & P142/O141 ACR and OPGW Installation Project, Ayer to Millbury, MA
Intensive Survey Technical Report and Request to Amend Intensive (Locational) Survey Permit
Limited Archaeological Mitigation and Archaeological Site Avoidance and Protection Plan Proposal
MHC #s RC.71519; PAL #4120.02 and 4131.01

Dear Ms. Simon:

On behalf of New England Power Company (NEP), enclosed please find the following documentation prepared by The Public Archaeology Laboratory, Inc. (PAL) for the proposed Lines 313/343 & P142/O141 Asset Condition Refurbishment (ACR) and OPGW Installation Project:

- *Intensive (Locational) Archaeological Survey, Lines 313/343 & P142/O141 Asset Condition Refurbishment and OPGW Installation Project, Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Grafton, Millbury, and Worcester, Massachusetts – April 2024*;
- *Archaeological Avoidance and Protection Plan, New England Power Company Lines 313/343 & P142/O141 Asset Condition Refurbishment and OPGW Installation Project: Seven Pre-Contact Sites, Millbury, Shrewsbury, Boylston, and Sterling, Massachusetts – May 2024;* and
- *Technical Proposal, Lines 313/343 & P142/O141 Asset Condition Refurbishment and OPGW Installation Project, Millbury, Shrewsbury, Boylston, and Sterling, Massachusetts – Limited Archaeological Mitigation and Archaeological Avoidance and Protection Plan for Seven Pre-Contact Sites – May 10, 2024.*

PAL requests an amendment to State Archaeologist's Permits #4198 and #4204 to conduct limited archaeological mitigation investigations at seven pre-contact archaeological sites in accordance with the methodology presented in the enclosed technical proposal. PAL will submit an addendum to the above-referenced technical report on the results of the limited mitigation of the sites upon completion of all field and laboratory analyses outlined in the technical proposal.

Thank you in advance for your time and attention to this matter. We would like to conduct the field investigations as soon as possible, so long as weather conditions are suitable to perform the investigations. If you have any questions or need further information, please do not hesitate to contact John M. Kelly, Principal Investigator, or me, at your convenience.

Sincerely,

Gregory R. Dubell, RPA
Energy Projects Manager

Enclosure

cc: see attached list

cc: Erin Whoriskey Cahill, NEP (w/ encl. – via email)
Michael Retter, NEP (w/encl. – via email)
Daniel Herzlinger, TRC (w/encl – via email)
Michael S. Wierbonics, USACE (w/encl. – via email)
Jon Patton, Massachusetts Department of Conservation and Recreation (w/encl. - via email)
David Robinson, MA Board of Underwater Archaeological Resources (w/encl. – via email)
Bettina Washington, Wampanoag Tribe of Gay Head/Aquinnah (w/encl. – via email)
David Weeden, Mashpee Wampanoag Tribe (w/encl. – via email)
Nakia Hendricks, Jr., Mashpee Wampanoag Tribe (w/encl. – via email)
John Brown, III, Narragansett Indian Tribe (w/encl. – via email)
Mark Andrews, Narragansett Indian Tribe (w/encl. – via email)
Cora Peirce, Narragansett Indian Tribe (w/encl. – via email)
Cheryl Toney Holley, Hassanamisco Nipmuc Band (w/encl. – via email)
Rae Gould, Hassanamisco Nipmuc Band (w/encl. – via email)

Appendix E: Summary Table of Known Federal and State OHM Sites

Table 1 - Summary of State- or Federal-Listed Properties
Line 313/343 and P142/O141 Asset Condition Refurbishment (ACR) and Access Road Improvement Project
Millbury to Ayer, Massachusetts
WO# 90000207143, 90000207147, 90000211630, and 900002148678

Coneco Site ID#	Property	Address Town	MassDEP RTN#	Distance/ Direction to Project Route	Notes	Potential for Impacts	Construction Recommendation
Town of Ayer, Shirley, and Lancaster							
1	Fort Devens	1650 Buena Vista	NPL and SEMS EPA ID: MA67210025154	Approximately 350 feet south of Structures 286 to 289 **(AOC-1)** and within Structures 221 to 233 of the Project Route **(AOC-2)** **See Figures 2, 3, 4, 5, and 6**	Release: Contamination attributed to use as an Army Post Impact to soil: Total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyl (PCBs), explosives, and metals Impact to groundwater: VOCs, metals, explosives, and per- and polyfluoroalkyl substances (PFAS) Groundwater Flow: Northeast Depth to Groundwater: 11 to 12 feet Regulatory Status: Open Contaminants of Concern: TPH, PAHs, pesticides, and PCBs in soil and VOCs, explosives, and metals in soil and groundwater and PFAS in groundwater	**Potential**	**See Memorandum**
	Buildings 3825 3826 3827	Moore Army Air Field	2-0010886		Release: Attributed to use as an airfield Impact to soil: TPH and VOCs Impact to groundwater: Not encountered Groundwater Flow: Not determined Depth to Groundwater: Not reported Regulatory Status: Class A-2 Response Action Outcome (RAO) Statement in 1996 Contaminants of Concern: TPH and VOCs in soil		
Town of Ayer							
2	Sandy Pond Substation	65 Westford Road	2-0010763	Within the Structure 331 portion of the Project Route **(AOC-3)** **See Figure 7**	Release: non-PCB mineral oil dielectric fluid (MODF) release from transformer due to a fire Impact to soil: TPH and PFAS (PFAS recently detected) Impact to groundwater: PFAS detected in 2021 Groundwater Flow: Not determined Depth to Groundwater: 10 to 11 feet Regulatory Status: Class A-2 RAO Statement in 1995 Contaminants of Concern: TPH/PFAS in soil, PFAS in groundwater	**Potential**	**See Memorandum**
			2-0010998		Release: non-PCB MODF release from transformer Impact to soil: TPH Impact to groundwater: Not sampled Groundwater Flow: Not determined Depth to Groundwater: 10 to 11 feet Regulatory Status: Class A-2 RAO Statement in 1996 Contaminants of Concern: TPH in soil		
			2-0013225		Release: non-PCB MODF release from transformer Impact to soil: Extractable petroleum hydrocarbons (EPH) Impact to groundwater: Non-aqueous phase liquid (NAPL) Groundwater Flow: Not determined Depth to Groundwater: 10 to 11 feet Regulatory Status: RAO was reportedly submitted in 2000; however, no copy available on MassDEP website Contaminants of Concern: EPH in soil and NAPL atop groundwater		

Table 1 - Summary of State- or Federal-Listed Properties
Line 313/343 and P142/O141 Asset Condition Refurbishment (ACR) and Access Road Improvement Project
Millbury to Ayer, Massachusetts
WO# 90000207143, 90000207147, 90000211630, and 900002148678

Coneco Site ID#	Property	Address Town	MassDEP RTN#	Distance/ Direction to Project Route	Notes	Potential for Impacts	Construction Recommendation
2	Sandy Pond Substation	65 Westford Road	2-0016886	Within the Structure 331 portion of the Project Route **(AOC-3)**	Release: non-PCB MODF release from transformer Impact to soil: EPH Impact to groundwater: EPH and NAPL Groundwater Flow: Southwest Depth to Groundwater: 9 to 20 feet Regulatory Status: Permanent Solution with Conditions (PSC) in 2023 with Activity Use and Limitation (AUL); Project Route is located with AUL boundary Contaminants of Concern: EPH in soil and groundwater and NAPL atop groundwater	**Potential**	**See Memorandum**
			N/A		This portion of the Project Route is located within a NEP-owned substation in the vicinity of oil-filled electrical equipment.	**Potential (Within Substation)**	
7	Spectacle Pond Well	Spectacle Pond Road	2-0020964	Approximately 2,000 feet south of Structures 329, 330, and 331 **(AOC-3)** **See Figure 7**	Release: PFAS identified in Town's drinking water well Impact to soil: Unknown Impact to groundwater: PFAS Groundwater Flow: Not determined Depth to Groundwater: Not reported Regulatory Status: Tier 1D Contaminants of Concern: PFAS in groundwater	**Potential**	**See Memorandum**
8	Tire Recycling Facility	43 Willow Road	2-0017951	Approximately 2,500 feet south of Structures 329, 330, and 331 **(AOC-3)** **See Figure 7**	Release: Contamination attributed to fire and foam utilized to suppress the fire Impact to soil: N/A- Surface Water (VPH, EPH, and metals) Impact to groundwater: PFAS Groundwater Flow: Not determined Depth to Groundwater: Not reported Regulatory Status: Tier 1 Contaminants of Concern: PFAS in groundwater		
10	Construction Site	158 Washington Street	2-0019834	Within Structures 307 and 308 **(AOC-4)** **See Figure 8**	Release: Hydraulic oil release from tractor trailer (EPH contamination) and PAHs (attributed to background condition) Impact to soil: EPH and PAHs Impact to groundwater: Not sampled Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: PSNC in 2016 Contaminants of Concern: EPH and PAHs in soil		

Table 1 - Summary of State- or Federal-Listed Properties
Line 313/343 and P142/O141 Asset Condition Refurbishment (ACR) and Access Road Improvement Project
Millbury to Ayer, Massachusetts
WO# 90000207143, 90000207147, 90000211630, and 900002148678

Coneco Site ID#	Property	Address Town	MassDEP RTN#	Distance/ Direction to Project Route	Notes	Potential for Impacts	Construction Recommendation
Town of Sterling							
15	Pratts Junction Substation	Pratts Junction Road	2-0010854	Adjoins Structure 2 (O141N) **(AOC-5)** **See Figure 9**	Release: 12 gallons of non-PCB MODF Impact to soil: TPH Impact to groundwater: Not sampled Groundwater Flow: Not reported Depth to Groundwater: Not encountered Regulatory Status: Immediate Response Action (IRA) Completion Report and Class A-1 RAO Statement in 1995 Contaminants of Concern: TPH in soil (concentrations remain in soil, but are below identified background concentration of 600 parts per million [ppm])	**Potential**	**See Memorandum**
			2-0013211		Release: 350 gallons of non-PCB MODF from a portable MODF tank Impact to soil: EPH Impact to groundwater: Not sampled Groundwater Flow: Not reported Depth to Groundwater: Not encountered Regulatory Status: Class A-2 RAO Statement in 2000 Contaminants of Concern: EPH in soil		
			2-0012349		Release: Use of property as substation Impact to soil: EPH and PCBs Impact to groundwater: Not impacted Groundwater Flow: Southwest Depth to Groundwater: More than 15 feet Regulatory Status: Class A-3 RAO Statement with AUL in 2000; Project Route is located outside of AUL boundary Contaminants of Concern: EPH and PCBs in soil		
			N/A		This portion of the Project Route is located adjacent to a NEP-owned substation in the vicinity of oil-filled electrical equipment.	**Potential (Adjacent to Substation)**	**See Memorandum**
Town of West Boylston							
23	Highway Department	35 Worcester Street	2-0000600	Adjoins Structures 71, 72, 123 and 124 to the west **(AOC-6)** **See Figure 10**	Release: Leaking gasoline, diesel fuel, and waste oil USTs identified on the property Impact to soil: TPH Impact to groundwater: Not sampled Groundwater Flow: Not reported Depth to Groundwater: Encountered, depth not reported Regulatory Status: No Further Action (1997) Contaminants of Concern: TPH in soil, sheen observed atop groundwater (not sampled)	**Potential**	**See Memorandum**

Table 1 - Summary of State- or Federal-Listed Properties
Line 313/343 and P142/O141 Asset Condition Refurbishment (ACR) and Access Road Improvement Project
Millbury to Ayer, Massachusetts
WO# 90000207143, 90000207147, 90000211630, and 900002148678

Coneco Site ID#	Property	Address Town	MassDEP RTN#	Distance/ Direction to Project Route	Notes	Potential for Impacts	Construction Recommendation
Town of Shrewsbury							
93	Substation	74 Rolfe Avenue	2-0018875	Within the Structures 134 and 135 portion of the Project Route **(AOC-8)** **See Figure 11**	Release: Non-PCB MODF release from transformer Impact to soil: EPH Impact to groundwater: Not sampled Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-1 RAO Statement in 2013 Contaminants of Concern: EPH in soil	**Potential**	**See Memorandum**
	Rolfe Avenue Substation		N/A		This portion of the Project Route is located within a NEP-owned substation in the vicinity of oil-filled electrical equipment.	**Potential (Within Substation)**	**See Memorandum**
Town of Grafton							
99	Wyman Gordon Corporation	244 Worcester Street	SEMS Archive 2-0000535 (Secondary RTNs include 2- 0011693 2- 0016519 2- 0017833)	Within Structures 158 to 162 and the Structures 29 to 33 portion of the Project Route **(AOC-9)** Structure 30 is within the Disposal Site Boundary and Work Pads for Structures 31, 32, 159A, 159B, and 160 are within AUL Boundary **See Figure 12**	Release: Contamination attributed to former industrial use Impact to soil: VOCs, PCBs, and metals (coal tar, pesticides/herbicides, asbestos, cyanide, and arsenic) Impact to groundwater: CVOCs Groundwater Flow: East Depth to Groundwater: 7 to 12 feet Regulatory Status: Tier Classification Extension and Tier Re-Classification (Partial RAO on portion of Disposal Site) AUL recorded for portion of New England Power Company d/b/a National Grid Transmission Corridor referred to by National Grid as "Pratts Junction-Millbury Right of Way" Contaminants of Concern: VOCs, TPH, PCBs, and metals (coal tar, pesticides, herbicides, asbestos, cyanide, and arsenic) and CVOCs in groundwater	**Likely**	**See Memorandum**
			2-0011288		Release: Hydraulic oil release Impact to soil: TPH Impact to groundwater: Not sampled Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-2 RAO Statement in 1996 Contaminants of Concern: TPH in soil	Unlikely	Site workers should be prepared to suspend work if contaminated media is encountered
			2-0020361		Release: Hydraulic oil release Impact to soil: EPH Impact to groundwater: Not impacted Groundwater Flow: Not reported Depth to Groundwater: Not encountered Regulatory Status: Permanent Solution in 2018 Contaminants of Concern: EPH in soil		

Table 1 - Summary of State- or Federal-Listed Properties
Line 313/343 and P142/O141 Asset Condition Refurbishment (ACR) and Access Road Improvement Project
Millbury to Ayer, Massachusetts
WO# 90000207143, 90000207147, 90000211630, and 900002148678

Coneco Site ID#	Property	Address Town	MassDEP RTN#	Distance/ Direction to Project Route	Notes	Potential for Impacts	Construction Recommendation
99	Wyman Gordan Corporation	244 Worcester Street	2-0011382	Adjoins Structures 158 to 162 and Structures 29 and 33 to the east and west	Release: Hydraulic oil release Impact to soil: TPH Impact to groundwater: Not sampled Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-2 RAO in 1996 Contaminants of Concern: TPH in soil	Unlikely	Site workers should be prepared to suspend work if contaminated media is encountered
			2-0011625		Release: Hydrofluoric acid to pavement Impact to soil: Asbestos and PCB Impact to groundwater: Not sampled Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-1 RAO Statement in 1997 Contaminants of Concern: N/A		
			2-0011693		Release: Hydraulic oil release Impact to soil: TPH Impact to groundwater: Not impacted Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Linked to RTN 2-0000535 Contaminants of Concern: TPH in soil		
			2-0016519		Release: Arsenic in soil Impact to soil: Arsenic Impact to groundwater: Not impacted Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Linked to RTN 2-0000535 Contaminants of Concern: Arsenic in soil		
			2-0017833		Release: Waste coolant release Impact to soil: EPH Impact to groundwater: Not impacted Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Linked to RTN 2-0000535 Contaminants of Concern: EPH in soil		
			2-0011762		Release: Attributed to industrial use Impact to soil: Metals Impact to groundwater: Not impacted Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-1 RAO Statement in 1997 Contaminants of Concern: N/A		

Table 1 - Summary of State- or Federal-Listed Properties
Line 313/343 and P142/O141 Asset Condition Refurbishment (ACR) and Access Road Improvement Project
Millbury to Ayer, Massachusetts
WO# 90000207143, 90000207147, 90000211630, and 900002148678

Coneco Site ID#	Property	Address Town	MassDEP RTN#	Distance/ Direction to Project Route	Notes	Potential for Impacts	Construction Recommendation
99	Wyman Gordan Corporation	244 Worcester Street	2-0011978	Adjoins Structures 158 to 162 and Structures 29 and 33 to the east and west	Release: Hydraulic oil release associated with industrial use Impact to soil: EPH and VPH Impact to groundwater: Not impacted Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-1 RAO Statement in 1998 Contaminants of Concern: EPH and VPH in soil	Unlikely	Site workers should be prepared to suspend work if contaminated media is encountered
			2-0012208		Release: Lubrication oil release Impact to soil: Lubrication oil Impact to groundwater: Not impacted Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-1 RAO Statement in 1998 Contaminants of Concern: N/A		
			2-0012378		Release: Contamination associated with industrial use Impact to soil: EPH and VPH Impact to groundwater: Not impacted Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-1 RAO Statement in 1998 Contaminants of Concern: N/A		
			2-0012472		Release: Gear oil release (Solid surfaces only) Impact to soil: N/A Impact to groundwater: N/A Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-1 RAO Statement in 1998 Contaminants of Concern: N/A		
			2-0013061		Release: Contamination associated with industrial use Impact to soil: EPH Impact to groundwater: Not impacted Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: IRA Completion and Class A-2 RAO Statement in 2000 Contaminants of Concern: EPH in soil		
			2-0013329		Release: Methyl acetylene and propadiene (MAPP) release Impact to soil: MAPP Impact to groundwater: Not impacted Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class B-1 RAO Statement in 2000 Contaminants of Concern: N/A		

Table 1 - Summary of State- or Federal-Listed Properties
Line 313/343 and P142/O141 Asset Condition Refurbishment (ACR) and Access Road Improvement Project
Millbury to Ayer, Massachusetts
WO# 90000207143, 90000207147, 90000211630, and 900002148678

Coneco Site ID#	Property	Address Town	MassDEP RTN#	Distance/ Direction to Project Route	Notes	Potential for Impacts	Construction Recommendation
99	Wyman Gordan Corporation	244 Worcester Street	2-0016362	Adjoins Structures 158 to 162 and Structures 29 and 33 to the east and west	Release: Hydrochloric acid release (Solid surfaces only) Impact to soil: N/A Impact to groundwater: N/A Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class A-1 RAO Statement in 2006 Contaminants of Concern: N/A	Unlikely	Site workers should be prepared to suspend work if contaminated media is encountered
Town of Millbury							
113	Millbury Substation 2	50 Grafton Street	2-0013614	Adjoins Structures 185 and 185S to the south **(AOC-10)** **See Figure 13**	Release: MODF release from ASTs and background condition Impact to soil: EPH, PCBs, and arsenic Impact to groundwater: Not impacted Groundwater Flow: South Depth to Groundwater: Not reported Regulatory Status: RAM Completion and Class A-2 RAO Statement in 2003 Contaminants of Concern: EPH, PCBs, and arsenic in soil	**Potential (Background Condition)**	**See Memorandum**
			2-0014039		Release: Background condition Impact to soil: Arsenic and lead Impact to groundwater: Not impacted Groundwater Flow: South Depth to Groundwater: Not encountered Regulatory Status: Class B-1 RAO Statement in 2002 Contaminants of Concern: Arsenic and lead in soil		
			2-0014362		Release: Background Condition Impact to soil: Arsenic Impact to groundwater: Not sampled Groundwater Flow: Not determined Depth to Groundwater: Not encountered Regulatory Status: Class B-1 RAO Statement in 2002 Contaminants of Concern: Arsenic in soil		
			N/A		This portion of the Project Route is located adjacent to a NEP-owned substation in the vicinity of oil-filled electrical equipment. Based off the scope of work, no work will be conducted within the substation.	Unlikely	Site workers should be prepared to suspend work if contaminated media is encountered

Appendix F: EG-501 and EG-502

PURPOSE: The purpose of this guidance is twofold:

1. Provide instructions to field crews on immediate actions to take in the event of an oil or hazardous materials spill; and
2. Provide clarity on the roles and responsibilities of all company employees and contractors who may be involved in spill response activities.

SCOPE: It is the responsibility of all company personnel and contractors to conduct their work activities with a sufficient level of diligence to protect themselves, the public, and the environment. This guidance document applies in the event of an oil or hazardous materials spill in Massachusetts. Note that all mercury spill response procedures are more specifically detailed in EG-504MA, and shall follow that guidance document.

RESPONSIBILITIES:

Dispatch – Upon notification being provided to Dispatch, they will be responsible for contacting the on-call Environmental Scientist/Engineer and providing a basic description of spill site conditions and the characteristics of the spill.

Environmental Scientist/Engineer – The Environmental Scientist/Engineer shall have overall responsibility for directing and coordinating spill cleanup actions and shall ensure that the cleanup is conducted in accordance with federal, state, and local regulations. The Environmental Scientist/Engineer may not be on-site to direct response activities at all spill sites, and may delegate on-site responsibilities to the Local Area Supervisor or an environmental consultant/contractor; however, the overall responsibility for directing and coordinating spill cleanup actions remains with the Environmental Scientist/Engineer. The Environmental Scientist/Engineer shall make every attempt to be on-site at all significant events, as outlined in EP-5. The responsibilities of the Environmental Scientist/Engineer are more fully detailed in EP-5.

Field Personnel – All employees are responsible for immediately reporting any release of oil or hazardous materials to their supervisor, dispatch, or the Environmental Scientist/Engineer. As they may frequently be "first responders" in the event of a spill, field crews shall conduct immediate spill response to minimize the extent of the spill and the potential for personal or public exposure as documented in this procedure.

Local Area Supervisor – The Local Area Supervisor shall work with the Environmental Scientist/Engineer to help coordinate spill response. The supervisor shall be responsible for ensuring that the Field Personnel carry out their responsibilities as documented in this procedure.

Safety Department Representative – The Safety Department representative shall coordinate with the Environmental Scientist/Engineer and Field Supervisor during incidents involving employee or public exposure to oil or hazardous materials. The Safety Department representative may be asked to help facilitate communications regarding the exposure and the effects of exposure to affected parties.

PROCEDURE:

This section details the chronological order of an oil or hazardous materials spill response procedure by responsible areas. However, appropriate response actions should be dictated by the specifics of the incident. Therefore, the order of the response and the responding area may vary accordingly.

Field Personnel

Prior to proceeding with any of the spill assessment and response activities below, determine if such activities can be performed safely. Such activities may require donning PPE in accordance with Safety Procedure F-611 (for incidents involving PCBs) or other applicable safety guidance.

- Determine what material, and what quantity, has spilled or is spilling;
- Stop the spill;
- Control the spill and secure the area:
  - Use absorbent/containment materials to minimize or eliminate the spread of contamination.
  - Do not walk through or touch the spilled material; step away from the spill area;
  - Using physical barriers, visible warnings (i.e., caution tape, cones, etc.), or other means, restrict access to the spill area. Prevent unauthorized persons from entering the area.
- Initiate emergency response by contacting the Local Area Supervisor or Dispatch. This should be done immediately after the spill site has been secured through the actions listed above. If possible (if more than one person is at the spill site), it should be done concurrently with the spill/site control activities. Prompt reporting is imperative since the Massachusetts Department of Environmental Protection (MA DEP) requires that they be notified within two hours of the actual spill event. The following information should be conveyed to the Local Area Supervisor/Dispatch:
  - Location of release;
  - Material that was spilled;
  - Estimated amount spilled;
  - When the spill was discovered;
  - What caused the release;
  - A description of the spill area; and
  - A description of impacted receptors.
- Perform a thorough assessment of what areas and/or items have become contaminated by the spilled material. Document the assessment and ensure that any contaminated materials or items do not leave the spill site – this includes boots, clothing, tools, and vehicles. "Quarantine" any vehicles or items contaminated, or suspected to be contaminated. These items should be placed within a restricted access area and shall not leave the site until assessed and decontaminated as necessary. This assessment may be facilitated by using the Initial Release Characterization Report form in Appendix A.

Dispatch

- Receive call from Field Personnel or Local Area Supervisor and obtain the information on the checklist provided as Appendix B.
- Initiate notification to the Environmental Scientist/Engineer.
- Provide a basic description of spill site conditions and the characteristics of the spill.

Local Area Supervisor

The Local Area Supervisor's primary responsibility shall be to ensure that Field Personnel carry out their responsibilities as outlined above. In the absence of an Environmental Scientist/Engineer on-site, the Local Area Supervisor may be requested to report to the location of the spill to obtain a first-hand account of site conditions. The Local Area Supervisor will:

- Determine the facts of spill situation and establish and implement the appropriate make-safe response, which will consider:
  - Control of employee and public exposure to contamination; and
  - Minimizing contamination (e.g., to a larger area; to company vehicles, tools, equipment; to employees' clothing).
- Perform a thorough assessment of what areas and/or items have become contaminated by the spilled material. Document the assessment and ensure that any contaminated materials or items do not leave the spill site.
- As appropriate and in conjunction with the Environmental Scientist/Engineer or their designated environmental consultant/contractor, determine the release of employees from the site. No employee who was in the spill area may leave the spill location until:
  - Clothing, boots, tools, equipment and vehicles have been assessed for possible contamination; and,
  - Contaminated items/articles have been decontaminated or disposed of.
  - Clothing or boots that cannot be removed and left on site should be covered (e.g., with tyvek coveralls and duck boots) and, upon return to the Operations Center, should be removed and disposed of as a contaminated material.
  - Upon removal of contaminated clothing and/or PPE, the employee should shower at the Operations Center.

Environmental Scientist/Engineer

- Assume responsibility for directing spill cleanup.
- Assess the scope of contamination, including property and personnel.
- Determine if release is reportable and contact Massachusetts Department of Environmental Protection or other applicable regulatory agency. Use EG-502MA as guidance. Perform notification as necessary.
- Communicate with owners of property or items contaminated by the spill;
- Communicate with employees exposed to the spilled material. With assistance from the Safety Department Representative, answer any questions employees may have regarding exposure and cleanup.

- Coordinate clean up with the spill response contractor and environmental consultant, as applicable, to:
  - Assess and decon (or dispose of) all affected areas, including items of the property owner as well as National Grid employees' clothing, boots, tools and/or equipment;
  - Assess and, as necessary, decon company personnel and vehicles; and,
  - Provide or obtain from environmental consultant details of clean up, which shall include as applicable:
    - Personnel on site
    - Vehicles on site
- Enter the incident into National Grid's Incident Management System (IMS).
- Consult EP-5 for additional responsibilities of the Environmental Scientist/Engineer.

Safety Department Representative
Upon request from the Environmental Scientist/Engineer, aid with communications regarding the exposure and the effects of exposure to affected parties.

Appendix A - See EG-501MA Form 1
Appendix B - See EG-501MA Form 2

Record of Change		
Date of Review/Revision:		
Revision	**Date**	**Description**
3	04/27/12	Updated EG with a complete rewrite. Rewrite focused on providing clear guidance on roles and responsibilities during initial spill response.
4	5/3/13	Added more specific guidance for Dispatch. Published Appendices A and B as separate forms.

SUBJECT	REFERENCE
Spill Response Notifications	**EP5- Release Response**

Purpose / Objective: This document contains information to assist in making proper notifications in the event of a spill.

Who: Company employees, Environmental Consultants, Spill Contractors and company contractors performing work for National Grid.

What to Do:

SPILLS TO WATER

Oil spills to water are Category 1 classified in accordance with National Grid Environmental Procedure No. 15, if they are likely to result in an enforcement action from a regulatory agency.

If any quantity of oil, regardless of PCB content or other hazardous material, is released to water (*wetlands, streams, lakes, ponds, storm or sanitary sewer*) contact:

DEP	ASAP (No later than 2 hours)
NRC	Within 2 hours
LEPC	Within 2 hours
Local Fire Dept.	Within 2 hours
Clean-up Contractor	ASAP
Environmental Engineer/Scientist	ASAP

If any quantity of oil with concentrations of PCBs ≥ 50 ppm, additionally notify:

EPA	Within 24 hours

SPILLS TO GROUND

Spills of over 250 gallons or containing 1 pound or PCBs ≥ 500 ppm are Category 1 classified in accordance with National Grid Environmental Procedure No. 15.

If ten or more gallons of oil, regardless of PCB content, are released to ground (soil, pavement) contact:

DEP	ASAP (No later than 2 hours)
Local Fire Dept.	Within 2 hours
Clean-up Contractor	ASAP
Environmental Engineer/Scientist	ASAP

If PCB concentrations are ≥ **50 ppm or unknown** and/or the spill creates a public safety issue, additionally contact:

LEPC	Within 2 hours
SERC	Within 2 hours

If **any quantity** of oil is released to the ground with concentrations of **PCBs ≥500ppm** contact:

DEP	ASAP (No later than 2 hours)
LEPC	Within 2 hours
Local Fire Dept.	Within 2 hours
Clean-up Contractor	ASAP

If PCB concentrations are between *50-499 ppm and over 2,700 gallons* are released or PCB concentrations ≥ *500 ppm and 270 gallons* are released, *additionally notify*:

EPA	Within 24 hours

If 25 or more gallons of transformer oil with PCBs <2 ppm are released to the ground contact:

DEP	ASAP
Local Fire Dept.	Within 2 hours
Clean-up Contractor	ASAP

SPILLS TO VEGETABLE GARDENS, FARM LAND, GRAZING LAND

If any quantity of oil with detectable levels of PCBs is release to gardens, farms or grazing land, contact:

DEP	ASAP (No later than 2 hours)
LEPC	Within 2 hours
SERC	Within 2 hours
Clean-up Contractor	ASAP
Environmental Engineer/Scientist	ASAP

If concentrations of PCBs are ≥ 50 ppm, additionally contact:

EPA	Within 24 hours
LEPC	Within 2 hours

ALWAYS NOTIFY THE DIVISION ENVIRONMENTAL ENGINEER/SCIENTIST OF ANY SPILL IMMEDIATELY.

AGENCY TELEPHONE NUMBERS

MADEP/MEMA (24 hours/day)	**888.304.1133**
NATIONAL RESPONSE CENTER (NRC)	**800.424.8802**
ENVIRONMENTAL PROTECTION AGENCY (EPA)	**617.223.7265**

Appendix G: RMAT Results

Climate Resilience Design Standards Tool Project Report

National Grid Line 313/343 & P142/O141 Transmission Line ACR and Flyover Switch Project

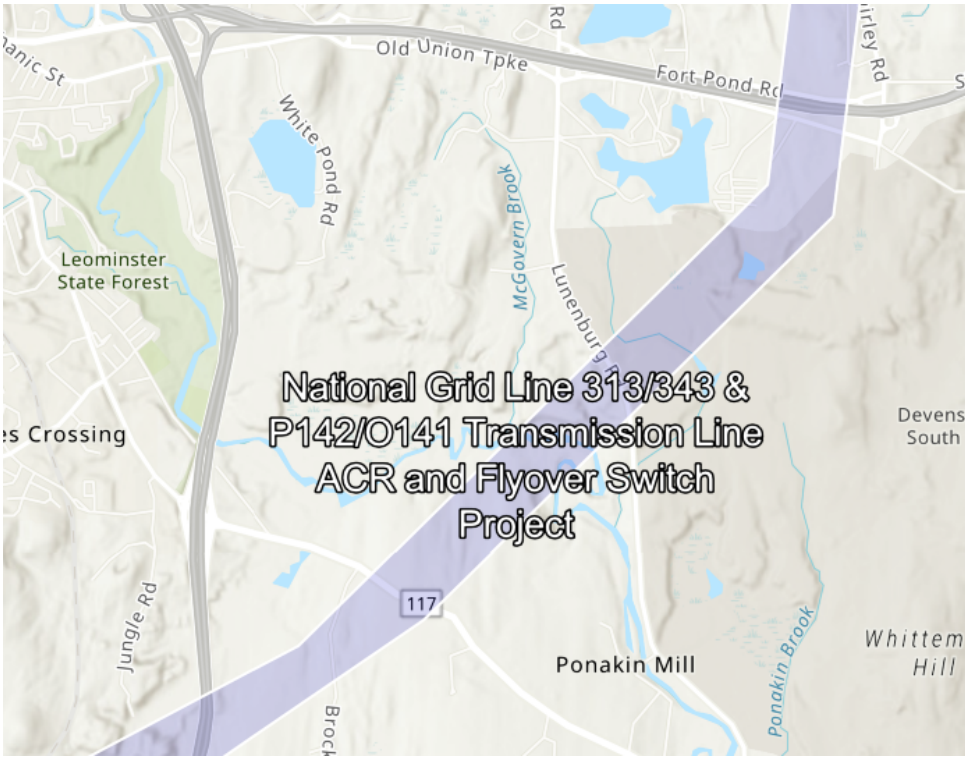
Date Created: 2/21/2023 3:10:32 PM
Created By: imohammadihall
Date Report Generated: 3/15/2023 1:35:47 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey Cahill (erin.whoriskey@nationalgrid.com)

Project Summary

Link to Project

Estimated Capital Cost: $100000000.00
End of Useful Life Year: 2074
Project within mapped Environmental Justice neighborhood: Yes

Ecosystem Service Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	Moderate Exposure



Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Existing High Voltage Transmission Line	Low Risk	High Risk	High Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Existing High Voltage Transmission Line					
Extreme Precipitation					
Existing High Voltage Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat					
Existing High Voltage Transmission Line	2070		50th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area
- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- No historic riverine flooding at project site
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "Moderate Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing impervious area of the project site is less than 10%
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site
- No tree removal

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - Existing High Voltage Transmission Line
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would not be expected to result in injuries
- Inoperability is likely to significantly impact other facilities, assets, or buildings and will likely affect their ability to operate
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: Existing High Voltage Transmission Line — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 50-yr (2%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Existing High Voltage Transmission Line	2070	50-Year (2%)	9.0	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	National Grid Line 313/343 & P142/O141 Transmission Line ACR and Flyover Switch Project
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2074
Location of Project:	Lancaster, Leominster, Shirley, Sterling
Estimated Capital Cost:	$100,000,000
Who is the Submitting Entity?	Private Other National Grid Erin Whoriskey Cahill (erin.whoriskey@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	New England Power Company (NEP) is proposing to perform access road improvements within existing rights-of-way (ROW) to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.
Project Submission Comments:	

Project Ecosystem Service Benefits

Factors Influencing Output

- ✓ Project promotes decarbonization

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate nature-based solutions that may reduce storm damage
- ✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- ✓ Incorporate green infrastructure to filter stormwater
- ✓ Incorporate nature-based solutions that improve water quality
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- ✓ Identify opportunities to remediate existing sources of pollution
- ✓ Provide opportunities for passive and/or active recreation through open space
- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	Yes
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No

Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	No

Project Assets

Asset: Existing High Voltage Transmission Line
Asset Type: Utility Infrastructure
Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
Construction Type: Maintenance (critical repair)
Construction Year: 2024
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Greater than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?
No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Between $10 million and $30 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure may reduce the ability to maintain some government services, while a majority of services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Reduced morale and public support

Report Comments

N/A

Climate Resilience Design Standards Tool Project Report

313/343 & P142/O141 ACR PROJECT

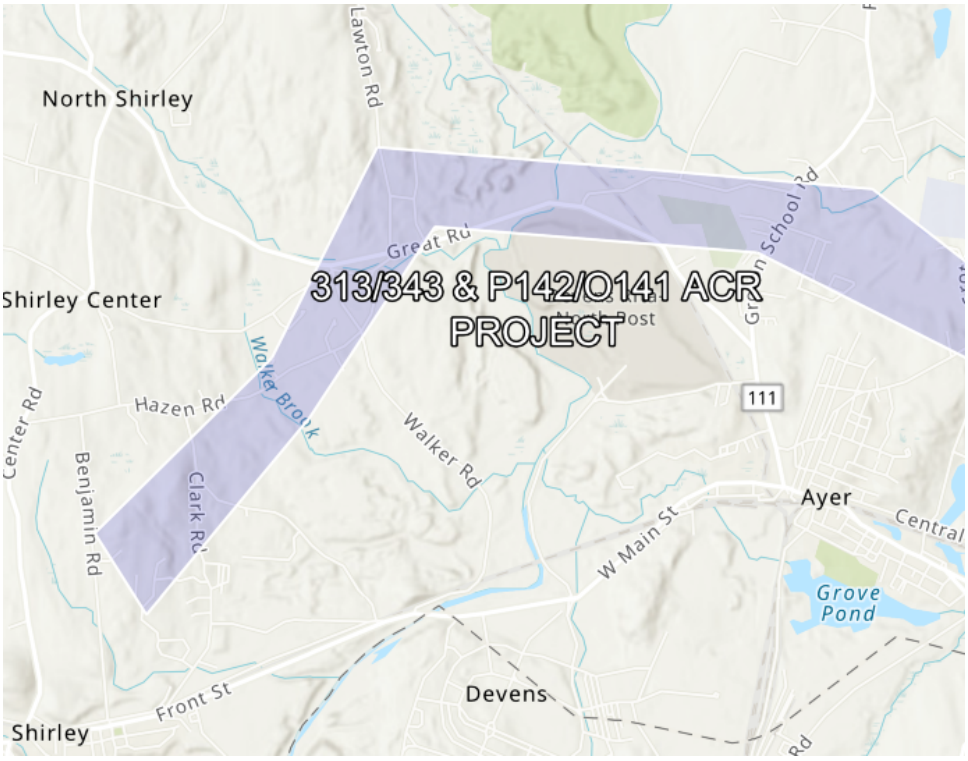
Date Created: 2/22/2023 9:39:08 AM
Created By: imohammadihall
Date Report Generated: 3/28/2023 12:42:08 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey (erin.whoriskey@nationalgrid.com)

Project Summary

Link to Project

Estimated Capital Cost: $100000000.00
End of Useful Life Year: 2074
Project within mapped Environmental Justice neighborhood: Yes

Ecosystem Service Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	Moderate Exposure



Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Existing High Voltage Transmission Line	Low Risk	High Risk	High Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Existing High Voltage Transmission Line					
Extreme Precipitation					
Existing High Voltage Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat					
Existing High Voltage Transmission Line	2070		50th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area
- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- No historic riverine flooding at project site
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "Moderate Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing impervious area of the project site is less than 10%
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site
- No tree removal

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - Existing High Voltage Transmission Line
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would not be expected to result in injuries
- Inoperability is likely to significantly impact other facilities, assets, or buildings and will likely affect their ability to operate
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: Existing High Voltage Transmission Line — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 50-yr (2%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Existing High Voltage Transmission Line	2070	50-Year (2%)	8.9	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	313/343 & P142/O141 ACR PROJECT
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2074
Location of Project:	Ayer, Shirley
Estimated Capital Cost:	$100,000,000
Who is the Submitting Entity?	Private Other New England Power Company (NEP) Erin Whoriskey (erin.whoriskey@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	New England Power Company (NEP) is proposing to perform access road improvements within existing rightsof- way (ROW) to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.

Project Submission Comments:

Project Ecosystem Service Benefits

Factors Influencing Output

✓ Project promotes decarbonization

Factors to Improve Output

✓ Incorporate nature-based solutions that may provide flood protection
✓ Incorporate nature-based solutions that may reduce storm damage
✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
✓ Incorporate green infrastructure to filter stormwater
✓ Incorporate nature-based solutions that improve water quality
✓ Incorporate nature-based solutions that sequester carbon carbon
✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
✓ Preserve, enhance, and/or restore coastal shellfish habitats
✓ Incorporate vegetation that provides pollinator habitat
✓ Identify opportunities to remediate existing sources of pollution
✓ Provide opportunities for passive and/or active recreation through open space
✓ Increase plants, trees, and/or other vegetation to provide oxygen production
✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
✓ Identify opportunities to prevent pollutants from impacting ecosystems
✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	Yes
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No
Remediates existing sources of pollution	No

Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	No

Project Assets

Asset: Existing High Voltage Transmission Line
Asset Type: Utility Infrastructure
Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
Construction Type: Maintenance (critical repair)
Construction Year: 2024
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Greater than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?
No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Between $10 million and $30 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure may reduce the ability to maintain some government services, while a majority of services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Reduced morale and public support

Report Comments

N/A

Climate Resilience Design Standards Tool Project Report

National Grid Line 313/343 & P142/O141 Transmission Line ACR and Flyover Switch Project 2

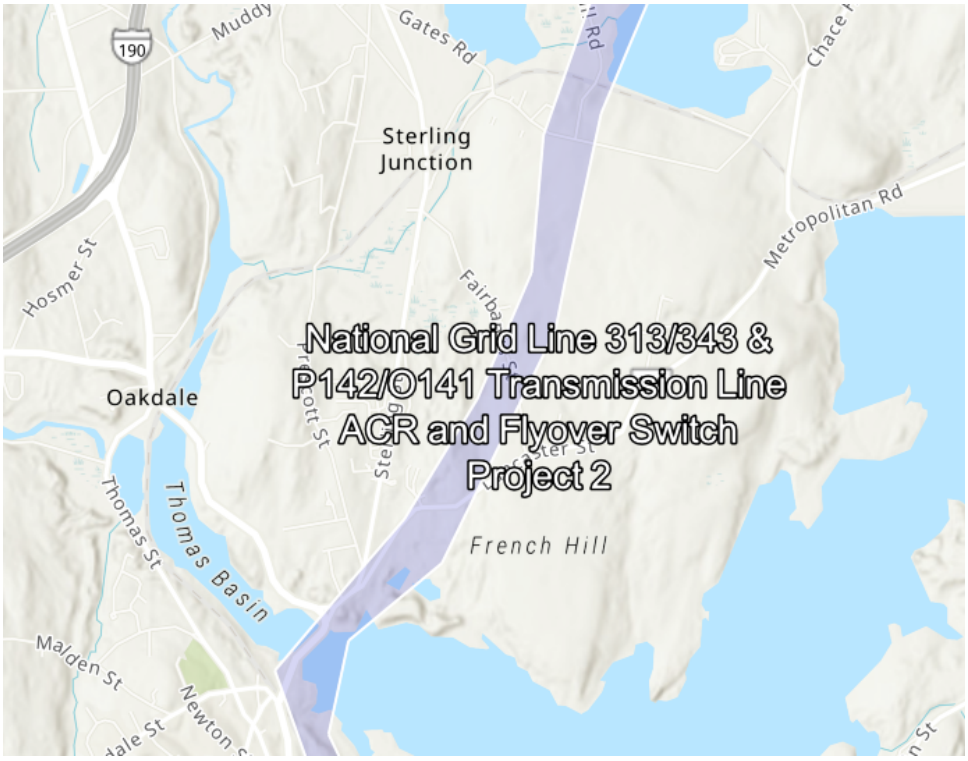
Date Created: 2/22/2023 9:49:40 AM
Created By: imohammadihall
Date Report Generated: 3/28/2023 1:57:07 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey (erin.whoriskey@nationalgrid.com)

Project Summary

Link to Project

Estimated Capital Cost: $100000000.00
End of Useful Life Year: 2074
Project within mapped Environmental Justice neighborhood: Yes

Ecosystem Service Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	Moderate Exposure



Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Existing High Voltage Transmission Line	Low Risk	High Risk	High Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Existing High Voltage Transmission Line					
Extreme Precipitation					
Existing High Voltage Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat					
Existing High Voltage Transmission Line	2070		50th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area
- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- Project is potentially susceptible to riverine erosion
- No historic riverine flooding at project site

Extreme Heat

This project received a "Moderate Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing impervious area of the project site is less than 10%
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site
- No tree removal

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - Existing High Voltage Transmission Line
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would not be expected to result in injuries
- Inoperability is likely to significantly impact other facilities, assets, or buildings and will likely affect their ability to operate
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: Existing High Voltage Transmission Line — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 50-yr (2%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Existing High Voltage Transmission Line	2070	50-Year (2%)	9.3	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	National Grid Line 313/343 & P142/O141 Transmission Line ACR and Flyover Switch Project 2
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2074
Location of Project:	Boylston, Sterling, W. Boylston
Estimated Capital Cost:	$100,000,000
Who is the Submitting Entity?	Private Other New England Power Company (NEP) Erin Whoriskey (erin.whoriskey@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	New England Power Company (NEP) is proposing to perform access road improvements within existing rightsof- way (ROW) to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.

Project Submission Comments:

Project Ecosystem Service Benefits

Factors Influencing Output

✓ Project promotes decarbonization

Factors to Improve Output

✓ Incorporate nature-based solutions that may provide flood protection
✓ Incorporate nature-based solutions that may reduce storm damage
✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
✓ Incorporate green infrastructure to filter stormwater
✓ Incorporate nature-based solutions that improve water quality
✓ Incorporate nature-based solutions that sequester carbon carbon
✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
✓ Preserve, enhance, and/or restore coastal shellfish habitats
✓ Incorporate vegetation that provides pollinator habitat
✓ Identify opportunities to remediate existing sources of pollution
✓ Provide opportunities for passive and/or active recreation through open space
✓ Increase plants, trees, and/or other vegetation to provide oxygen production
✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
✓ Identify opportunities to prevent pollutants from impacting ecosystems
✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	Yes
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No

Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	No

Project Assets

Asset: Existing High Voltage Transmission Line
Asset Type: Utility Infrastructure
Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
Construction Type: Maintenance (critical repair)
Construction Year: 2024
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Greater than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?
No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Between $10 million and $30 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure may reduce the ability to maintain some government services, while a majority of services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Reduced morale and public support

Report Comments

N/A

Climate Resilience Design Standards Tool Project Report

National Grid Line 313/343 & P142/O141 Transmission Line ACR and Flyover Switch Project 3

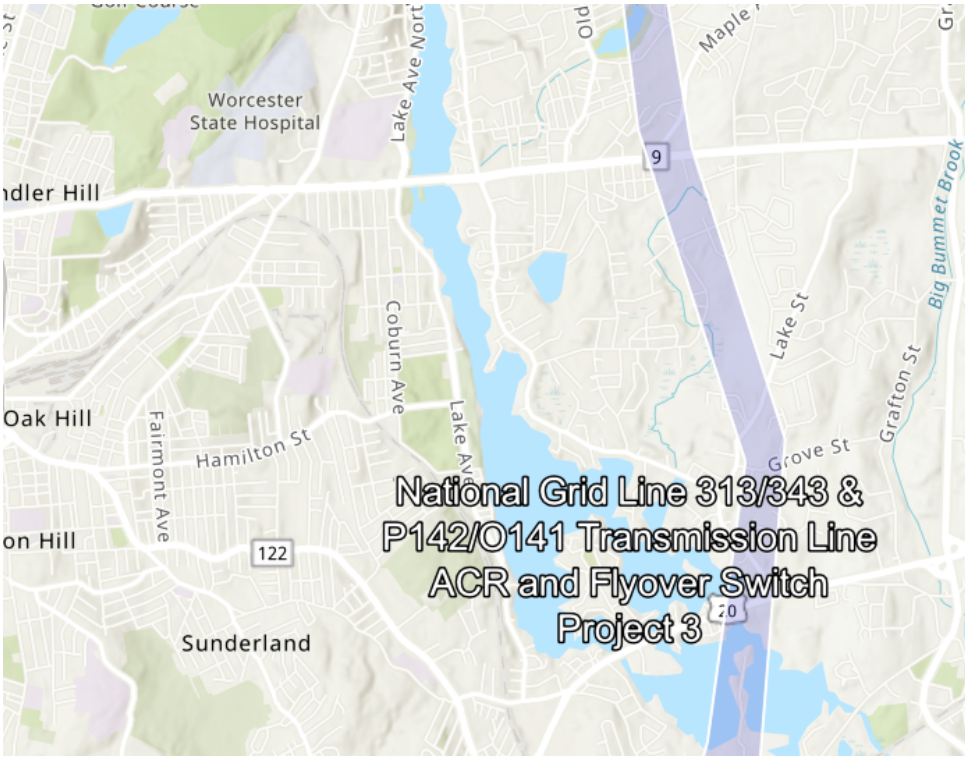
Date Created: 2/22/2023 9:53:13 AM
Created By: imohammadihall
Date Report Generated: 3/28/2023 1:58:41 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey (erin.whoriskey@nationalgrid.com)

Project Summary

Link to Project

Estimated Capital Cost: $100000000.00
End of Useful Life Year: 2074
Project within mapped Environmental Justice neighborhood: Yes

Ecosystem Service Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Existing High Voltage Transmission Line	Low Risk	High Risk	High Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Existing High Voltage Transmission Line					
Extreme Precipitation					
Existing High Voltage Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat					
Existing High Voltage Transmission Line	2070		50th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area
- Existing impervious area of the project site is between 10% and 50%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 500ft of a waterbody and less than 20ft above the waterbody
- No historic riverine flooding at project site
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing impervious area of the project site is between 10% and 50%
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site
- No tree removal

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - Existing High Voltage Transmission Line
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would not be expected to result in injuries
- Inoperability is likely to significantly impact other facilities, assets, or buildings and will likely affect their ability to operate
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: Existing High Voltage Transmission Line — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 50-yr (2%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Existing High Voltage Transmission Line	2070	50-Year (2%)	9.3	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	National Grid Line 313/343 & P142/O141 Transmission Line ACR and Flyover Switch Project 3
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2074
Location of Project:	Boylston, Grafton, Millbury, Shrewsbury, W. Boylston, Worcester
Estimated Capital Cost:	$100,000,000
Who is the Submitting Entity?	Private Other New England Power Company (NEP) Erin Whoriskey (erin.whoriskey@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	New England Power Company (NEP) is proposing to perform access road improvements within existing rightsof- way (ROW) to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.
Project Submission Comments:	

Project Ecosystem Service Benefits

Factors Influencing Output

- ✓ Project promotes decarbonization

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate nature-based solutions that may reduce storm damage
- ✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- ✓ Incorporate green infrastructure to filter stormwater
- ✓ Incorporate nature-based solutions that improve water quality
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- ✓ Identify opportunities to remediate existing sources of pollution
- ✓ Provide opportunities for passive and/or active recreation through open space
- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	Yes
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No

Prevents pollution	No
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	No

Project Assets

Asset: Existing High Voltage Transmission Line
Asset Type: Utility Infrastructure
Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
Construction Type: Maintenance (critical repair)
Construction Year: 2024
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Greater than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?
No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Between $10 million and $30 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure may reduce the ability to maintain some government services, while a majority of services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Reduced morale and public support

Report Comments

N/A

Climate Resilience Design Standards Tool Project Report

National Grid Line 313/343 & P142/O141 Transmission Line ACR and Flyover Switch Project 4

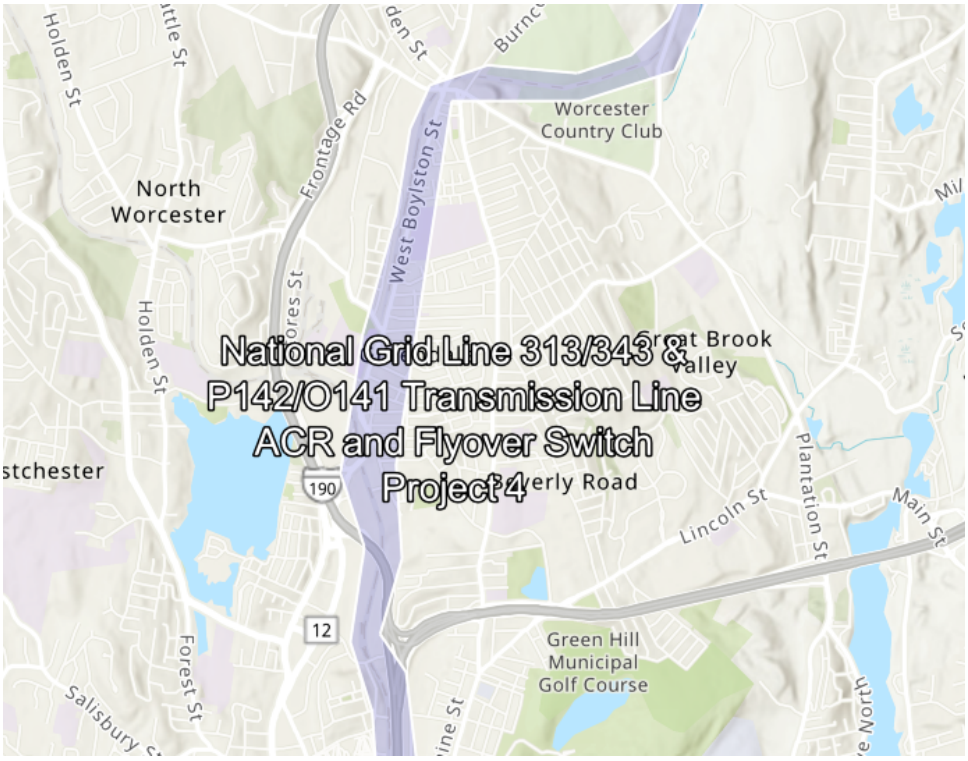
Date Created: 2/22/2023 9:55:58 AM
Created By: imohammadihall
Date Report Generated: 3/28/2023 1:00:04 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey (erin.whoriskey@nationalgrid.com)

Project Summary

Link to Project

Estimated Capital Cost: $100000000.00
End of Useful Life Year: 2074
Project within mapped Environmental Justice neighborhood: Yes

Ecosystem Service Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Existing High Voltage Transmission Line	Low Risk	High Risk	High Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Existing High Voltage Transmission Line					
Extreme Precipitation					
Existing High Voltage Transmission Line	2070			50-yr (2%)	Tier 3
Extreme Heat					
Existing High Voltage Transmission Line	2070		50th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area
- Existing impervious area of the project site is between 10% and 50%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- No historic riverine flooding at project site
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing impervious area of the project site is between 10% and 50%
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site
- No tree removal

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - Existing High Voltage Transmission Line
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would not be expected to result in injuries
- Inoperability is likely to significantly impact other facilities, assets, or buildings and will likely affect their ability to operate
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: Existing High Voltage Transmission Line — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 50-yr (2%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Existing High Voltage Transmission Line	2070	50-Year (2%)	9.2	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	National Grid Line 313/343 & P142/O141 Transmission Line ACR and Flyover Switch Project 4
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2074
Location of Project:	W. Boylston, Worcester
Estimated Capital Cost:	$100,000,000
Who is the Submitting Entity?	Private Other New England Power Company (NEP) Erin Whoriskey (erin.whoriskey@nationalgrid.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	New England Power Company (NEP) is proposing to perform access road improvements within existing rightsof- way (ROW) to serve access needs for several transmission lines in central Massachusetts. The ROW is shared by ten (10) transmission lines of various voltages (345 kV, 115 kV, and 69 kV) though not all of the transmission lines traverse the full length of the ROW. The ROW is approximately 35.7 miles and runs generally in a southwest to northeast direction between Cross Street in Millbury to Westford Road in Ayer.
Project Submission Comments:	

Project Ecosystem Service Benefits

Factors Influencing Output

- ✓ Project promotes decarbonization

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate nature-based solutions that may reduce storm damage
- ✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- ✓ Incorporate green infrastructure to filter stormwater
- ✓ Incorporate nature-based solutions that improve water quality
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- ✓ Identify opportunities to remediate existing sources of pollution
- ✓ Provide opportunities for passive and/or active recreation through open space
- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	Yes
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No

Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	No

Project Assets

Asset: Existing High Voltage Transmission Line
Asset Type: Utility Infrastructure
Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
Construction Type: Maintenance (critical repair)
Construction Year: 2024
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Greater than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?
No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Between $10 million and $30 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure may reduce the ability to maintain some government services, while a majority of services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Reduced morale and public support

Report Comments

N/A