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December 15, 2023

Tori Kim, Director
MEPA Office
100 Cambridge Street
Suite 900
Boston, MA 02114

**RE: Filing of Expanded Environmental Notification Form (EENF) for the New England Power Company d/b/a National Grid Line 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project in Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury, Massachusetts**

Dear Ms. Kim:

On behalf of the New England Power Company d/b/a National Grid (NEP), TRC Environmental Corporation (TRC) is submitting this Expanded Environmental Notification Form (EENF) for the Line 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project (Project) 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 and work pad improvements will be utilized to immediately support the refurbishment 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 Project is located within an existing Right-of-Way (ROW) which begins at Sandy Pond Substation in Ayer, MA and terminates at the Millbury #3 Substation in Millbury, MA, approximately 35.7 miles in length. The access road improvements extend to two taps off the main ROW and terminate at the existing Bloomingdale and Nashua Street Substations in Worcester, MA.

The access road improvements will immediately support two ACR projects involving the replacement of existing copper weld shield wires on the O141/P142 and the 313/343 Lines with a fiber optic ground wire (OPGW). In addition, select structures will be replaced and maintenance work will be performed on some of the remaining structures, such as the replacement of insulators and/or crossarms (ACR work). No significant tree-clearing or expansion of the ROW is proposed as part of the Project.

We appreciate your review of this Project. If you should have any questions, please contact me at 207.274.2655 or email me at DHerzlinger@trccompanies.com.

Sincerely,
TRC Environmental Corporation

Daniel J. Herzlinger
Senior Project Manager
[cc: Erin Whoriskey Cahill, NEP]

# Expanded Environmental Notification Form

December 2023

## 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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## ENVIRONMENTAL NOTIFICATION FORM

## TABLES



## APPENDICES

## ACRONYM LIST

| | |
|---|---|
| **ACEC** | Areas of Critical Environmental Concern |
| **ACR** | Asset Condition Refurbishment |
| **BG** | Block Group |
| **BLSF** | Bordering Land Subject to Flooding |
| **BMPs** | Best Management Practices |
| **BVW** | Bordering Vegetated Wetlands |
| **CBO** | Community Based Organization |
| **CMP** | Conservation and Management Permit |
| **DCR** | Department of Conservation and Recreation |
| **DGA** | Designated Geographic Area |
| **EENF** | Expanded Environmental Notification Form |
| **EH** | Estimated Habitat |
| **EIR** | Environmental Impact Report |
| **EJ** | Environmental Justice |
| **EFI** | Environmental Field Issue |
| **EOEEA** | Executive Office of Energy and Environmental Affairs |
| **EPA** | United States Environmental Protection Agency |
| **FEMA** | Federal Emergency Management Agency |
| **FIRM** | Flood Insurance Rate Map |
| **GHG** | Greenhouse Gas |
| **GPS** | Global Positioning System |
| **HI** | Hazard Index |
| **ILSF** | Isolated Land Subject to Flooding |
| **IWQC** | Individual Water Quality Certification |
| **kV** | kilovolt |
| **LUW** | Land Under Water |
| **MA** | Massachusetts |
| **MA DPH** | Massachusetts Department of Health |
| **MA WPA** | Massachusetts Wetlands Protection Act |
| **MAHW** | Mean Annual High Water |
| **MassDEP** | Massachusetts Department of Environmental Protection |
| **MassDOT** | Massachusetts Department of Transportation |
| **MassGIS** | Massachusetts Geographic Information System |
| **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 |
| **MEPA EJ Public Involvement Protocol** | MEPA Public Involvement Protocol for Environmental Justice |
| **MHC** | Massachusetts Historical Commission |
| **MESA** | Massachusetts Endangered Species Act |
| **NEP** | New England Power Company |
| **NFIP** | National Flood Insurance Program |
| **NHESP** | Massachusetts Natural Heritage and Endangered Species Program |
| **NPDES** | National Pollutant Discharge Elimination System |
| **NWI** | National Wetland Inventory |
| **OHWM** | Ordinary High Water Mark |
| **O&M Plan** | Operations & Maintenance Plan |
| **OPGW** | Optic Ground Wire |
| **PAL** | The Public Archaeology Laboratory, Inc. |
| **PCN** | Pre-Construction Notification |
| **PEM** | Palustrine Emergent |
| **PFO** | Palustrine Forested |
| **PH** | Priority Habitat |
| **PM** | Particulate Matter |
| **Project** | 313/343/O141/P142 ACR and Access Road Improvement Project |
| **PSS** | Palustrine Shrub/Scrub |
| **RA** | Riverfront Area |
| **RMAT Tool** | RMAT Climate Resilience Design Standards Tool |
| **RMP** | Risk Management Plan |
| **ROW** | Right-of-Way |
| **SAPP** | Archaeological Site Avoidance and Protection Plan |
| **SEIR** | Single Environmental Impact Report |
| **SHMCAP** | State Hazard Mitigation and Climate Adaptation Plan |
| **SWPPP** | Stormwater Pollution Prevention Plan |
| **the Act** | Section 58 of Chapter 8 of the Acts of 2021*: An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy* |
| **TMP** | Traffic Management Plan |
| **TOY** | Time-Of-Year |
| **TRC** | TRC Environmental Corporation |
| **USACE** | US Army Corps of Engineers |

| | |
|---|---|
| **USEPA** | United States Environmental Protection Agency |
| **USFWS** | United States Fish and Wildlife Service |
| **USGS** | United States Geographic Survey |
| **WPA** | Wetlands Protection Act |
| **WsPA** | Watershed Protection Act |
| **WQC** | Water Quality Certification |

# Environmental Notification Form

# *Commonwealth of Massachusetts*

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

## Environmental Notification Form

***For Office Use Only***
EEA#: _____
MEPA Analyst: _____

*The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.*

| | | | |
|---|---|---|---|
| Project Name: **New England Power Company d/b/a National Grid Line 313/343/O141/P142 Asset Condition Refurbishment (ACR) and Access Road Improvement Project in Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury, Massachusetts** | | | |
| Street Address: *Existing overhead electrical transmission right-of-way crossing multiple public ways.* | | | |
| Municipality: *Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury* | | Watershed: *Blackstone & Nashua* | |
| Universal Transverse Mercator Coordinates: *UTM 18* | | Latitude: *start: 42.568519*<br>*end: 42.188019*<br>Longitude: *start: -71.530304*<br>*end: -71.737489* | |
| Estimated commencement date: *July 2024* | | Estimated completion date: *December 2026* | |
| Project Type: *Utility: Overhead Transmission Line* | | Status of project design: *50*%complete | |
| Proponent: *New England Power Company (NEP)* | | | |
| Street Address: *170 Data Drive* | | | |
| Municipality: *Waltham* | | State: *MA* | Zip Code: *02451* |
| Name of Contact Person: *Dan Herzlinger* | | | |
| Firm/Agency: *TRC Environmental* | | Street Address: *63 Marginal Way, 4th Floor* | |
| Municipality: *Portland* | | State: *ME* | Zip Code: *04101* |
| Phone: *(207) 274-2655* | Fax: | | E-mail: *dherzlinger@trccompanies.com* |

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
X ☒Yes ☐No

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

| | |
|---|---|
| a Single EIR? (see 301 CMR 11.06(8)) | ☒Yes ☐No |
| a Rollover EIR? (see 301 CMR 11.06(13)) | ☐Yes ☒No |
| a Special Review Procedure? (see 301CMR 11.09) | ☐Yes ☒No |
| a Waiver of mandatory EIR? (see 301 CMR 11.11) | ☐Yes ☒No |
| a Phase I Waiver? (see 301 CMR 11.11) | ☐Yes ☒No |

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

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

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

| MEPA EIR Threshold |
|---|
| **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))* |
| **EIR: Wetlands, Waterways & Tidelands:** *Alteration of one or more acres of bordering vegetated wetland. (301 CMR 11.03(3)(a)(1)(a)* |
| **EIR: Environmental Justice:** *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))* |
| MEPA ENF Thresholds |
| **ENF: State Listed Species:** *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)). (Potential-consultation with NHESP ongoing.)* |
| **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))* |
| **ENF: Areas of Critical Environmental Concern:** *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))* |

Which State Agency Permits will the project require?

The following State Agency Permit or Approvals are anticipated:

- ***Massachusetts Department of Environmental Protection (MassDEP) Section 401 Individual Water Quality Certificate;***
- ***Department of Conservation and Recreation (DCR) Construction Access Permit and Watershed Protection Act Permit***
- ***Natural Heritage and Endangered Species (NHESP) Conservation Management Permit (if needed)***
- ***Massachusetts Department of Transportation (MassDOT) Permit to Access State Highway/Non-Municipal Utility Permits for Crossing Over of State Roads with Utility Lines***

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

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

| Summary of Project Size & Environmental Impacts | Existing | Change | Total |
|---|---|---|---|
| | | | |
| Total site acreage | 1,202.5 | 0 | 1,202.5 |
| New acres of land altered | N/A | 306.2 | 306.2 |
| Acres of impervious area | ~454 | 0 | 0 |
| Square feet of new bordering vegetated wetlands alteration | N/A | 19.7 acres of temporary alteration | 19.7 acres of temporary alteration |
| Square feet of new other wetland alteration | N/A | Riverfront: 20.1 acres permanent, 4.6 acres temporary<br>BLSF: 4.7 acres permanent, 3.6 acres temporary<br>LUW: 1.4 acres temporary<br>Bank: 3,054 linear feet temporary | Riverfront: 20.1 acres permanent, 4.6 acres temporary<br>BLSF: 4.7 acres permanent, 3.6 acres temporary<br>LUW: 1.4 acres temporary<br>Bank: 3,054 linear feet temporary |
| Acres of new non-water dependent use of tidelands or waterways | N/A | N/A | N/A |
| | | | |
| Gross square footage | N/A | N/A | N/A |
| Number of housing units (structures) | 722 | 0 | 722 |
| Maximum height (feet) | 120 | 0 | 120 |
| | | | |
| Vehicle trips per day | N/A | N/A | N/A |
| Parking spaces | N/A | N/A | N/A |
| | | | |
| Water Use (Gallons per day) | N/A | N/A | N/A |
| Water withdrawal (GPD) | N/A | N/A | N/A |
| Wastewater generation/treatment (GPD) | N/A | N/A | N/A |
| Length of water mains (miles) | N/A | N/A | N/A |
| Length of sewer mains (miles) | N/A | N/A | N/A |

Has this project been filed with MEPA before?
☐ Yes (EEA #_____) ☒No

Has any project on this site been filed with MEPA before?
☐ Yes (EEA #_____) ☒No

**GENERAL PROJECT INFORMATION – all proponents must fill out this section**
**PROJECT DESCRIPTION:**

Describe the existing conditions and land uses on the project site:
***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 the 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 ACR work is typically considered Routine Maintenance under 301 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 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 ROW includes existing transmission structures and lines for multiple circuits and access roads, many of which need to be refreshed or repaired. The land use within the ROW varies widely by location. Some sections of the ROW are densely developed, urban and suburban areas, while other sections are more rural agricultural lands and open space. See below for a list of the land uses within the Project ROW:***

**Land Use within the ROW.**

| 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 |

Describe the proposed project and its programmatic and physical elements:

***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 full scope of work associated with the Project is depicted on the Access Plans (Appendix A, Figure 2).***

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

***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 current transmission lines, create easier access to individual structures for future maintenance, and address some of the drainage and erosion issues from deteriorating access roads in the ROW. 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.***

***No-Build Alternative***

***Under the no-build alternative, no improvements to the roads, workpads, structures or transmission lines would be made to the 313/343 and the O141/P142 lines and the identified reliability need discussed in Section 2 would not be met. The no-build alternative would not ensure reliably for customers in Massachusetts. This alternative does not address existing drainage and erosion issues currently along the corridor and does not allow easy access to all of the structures for emergency repair and routine maintenance along the corridor.***

***Permitting each ACR project separately***

***Permitting each ACR project separately would likely have more impacts than the preferred alternative due to mobilizing heavy equipment to the site multiple times. While the impacts from the structure replacements, transmission line upgrades, and work pads for the ACR work would remain the same, the feet of access roads would likely increase. This is because two primary access roads would be upgraded to align closer to each transmission lines (O141/P142 and Line 313/343). This could add up to a substantial increase in access road length and would cause more environmental impact with the additional mobilization of the equipment for the ACR work on each line.***

***Limited Design Alternative***

***This alternative includes limiting the design of the Project to address only the most critical asset related issues. 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 address existing drainage and erosion issues 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 emergency needs and to complete the ACR work. 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.***

***Preferred Alternative***

***The preferred alternative requires more work and disturbance up-front but creates less disturbance in the future. The preferred alternative addresses existing drainage and erosion issues, allows access for emergency repair and maintenance of structures and transmission lines in the corridor and maintains resiliency for adapting to climate change and the increased frequency of storm events. The preferred alternative 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 the full-scale ACR work and access road improvements scope meets all Project objectives.***

***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 does not comply with MEPA regulations. 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 Preferred Alternative will best address the Project's identified purpose and need.***

*AREAS OF CRITICAL ENVIRONMENTAL CONCERN:*

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

☒Yes (***Squannassit, Petapawag, Central Nashua River Valley)***
☐No

if yes, does the ACEC have an approved Resource Management Plan? ___ Yes **_X__** No;
If yes, describe how the project complies with this plan.

_____

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

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

_____

***Access roads will be crowned to allow, where needed, drainage to grass swales which will promote the decrease in velocity of stormwater runoff. Best Management Practices (BMPs) will be implemented to minimize any potential impacts to regulated resources within the ACECs. 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 within the ACECs. The Project will seek coverage under the EPA Stormwater Construction General Permit and NEP will prepare a SWPPP for the Project. See Appendix D for more details on BMPs that will be implemented during construction.***

*RARE SPECIES:*

***Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)***

☒Yes (see below) ☐No

***Two (2) reptiles, two (2) invertebrates, one (1) bird and one (1) plant), along portions of the Project ROW Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury. The names and locations of these species are not provided, as requested by MA NHESP.***

*HISTORICAL /ARCHAEOLOGICAL RESOURCES:*

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

☒Yes (See below) ☐No

***Review of the Inventory of Historic and Archaeological Assets of the Commonwealth indicates that several historic and archaeological sites are located within and immediately adjacent to the Project area. NEP's cultural resource consultant (PAL) has conducted a cultural resources due diligence, sensitivity assessment, and archeological survey, under a permit issued by the Massachusetts Historical Commission. Additional information regarding the surveys to identify and evaluate historic and archaeological resources for the Project can be found below in the Historic and Archaeological Resources section below.***

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

WATER RESOURCES:

Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? _**X**_Yes ___No; if yes, identify the ORW and its location.

***Wachusett Reservoir, West Boylston, MA is an OWR within a half-mile radius of the ROW and there are 38 Certified Vernal Pools (CVPs) located within a half-mile radius of the ROW in Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton, and Millbury***

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

Are there any impaired water bodies on or within a half-mile radius of the project site? _**X**__Yes ___No; if yes, identify the water body and pollutant(s) causing the impairment:_____.

| Waterbody | Watershed | Water Type Category | Category # |
|---|---|---|---|
| Blackstone River | Millers | River | 5 Impaired |
| Catacoonamug Brook | Nashua | River | 5 Impaired |
| Dorothy Pond | Blackstone | Freshwater Lake | 4A Impaired |
| Flannagan Pond | Nashua | Freshwater Lake | 4C Impairment Not Caused by Pollutant |
| Flint Pond | Blackstone | Freshwater Lake | 4A Impaired |
| Gates Brook | Nashua | River | 5 Impaired |
| Indian Lake | Blackstone | Freshwater Lake | 4A Impaired |
| James Brook | Nashua | River | 5 Impaired |
| Lake Quinsigamond | Blackstone | Freshwater Lake | 5 Impaired |
| Muddy Brook | Nashua | River | 5 Impaired |
| Mulpus Brook | Nashua | River | 5 Impaired |
| Nashua River | Nashua | River | 5 Impaired |
| Newton Pond | Blackstone | Freshwater Lake | 4C Impairment Not Caused by Pollutant |
| North Nashua River | Nashua | River | 5 Impaired |
| Poor Farm River | Nashua | River | 5 Impaired |
| Quinsigamond River | Nashua | River | 5 Impaired |
| Riverlin Street Pond | Blackstone | Freshwater Lake | 4C Impairment Not Caused by Pollutant |
| Sandy Pond | Nashua | Freshwater Lake | 4C Impairment Not Caused by Pollutant |

| | | | |
|---|---|---|---|
| Scarletts Brook | Nashua | River | 5 Impaired |
| Sewall Brook | Blackstone | River | 5 Impaired |
| Spectacle Pond | Merrimack | Freshwater Lake | 5 Impaired |
| Spectacle Pond | Nashua | Freshwater Lake | 5 Impaired |
| Wachusett Reservoir | Nashua | Freshwater Lake | 4A Impaired |
| Washacum Brook | Nashua | River | 5 Impaired |
| Wekepeke Brook | Nashua | River | 5 Impaired |
| West Waushacum Pond | Nashua | Freshwater Lake | 4C Impairment Not Caused by Pollutant |
| Woolshop Pond | Blackstone | Freshwater Lake | 5 Impaired |

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? ___Yes ___No – **Unknown.**

**STORMWATER MANAGEMENT:**

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

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

**MASSACHUSETTS CONTINGENCY PLAN:**

Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? Yes _**X**__ No ___ ;

if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome classification):____

| RTN | Site Name | Site Address | Municipality | Compliance Status | Compliance Date |
|---|---|---|---|---|---|
| 2-0012349 | Pratts Junction Substation | Pratts Junction Rd | Sterling | RAO | 8/9/2002 |
| 2-0000535 | Wyman Gordan Company | 244 Worcester St | Grafton | TIER 2 | 04/20/2022 |

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

***There are many AULs within 1 mile of the Project ROW but only one that intersects the ROW based on a review of data available from MassGIS. NEP has retained the services of a Licensed Site Professional who will ensure the project is consistent with the conditions outlined in the AUL.***

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

SOLID AND HAZARDOUS WASTE:

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

**The project is not expected to generate hazardous waste during construction. Solid waste will be limited to construction related debris (trash) that will be containerized throughout the duration of the Project.**

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

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

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

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

***Any 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 construction will either be USEPA Tier 4-compliant or will be retrofitted with USEPA-verified (or equivalent) emission control devices such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) and installed on the exhaust system side of the diesel combustion engine.***

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

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

DESIGNATED WILD AND SCENIC RIVER:

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

***The Project area crosses over the Nashua River, classified as scenic by the National Park Service.***

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

***From 700 feet upstream of the crest of Ice House Hydroelectric Project Dam to 500 feet downstream.***

***From 9,240 feet upstream from the crest of the Pepperell Hydroelectric Project Dam to 1,000 feet downstream.***

If yes, does the project have the potential to impact any of the "outstandingly remarkable" resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River?
Yes ___ No **_X__** ;

if yes, specify name of river and designation: _____;

if yes, will the project will result in any impacts to any of the designated "outstandingly remarkable" resources of the Wild and Scenic River or the stated purposes of a Scenic River.
Yes ___ No _X__ ;

if yes,describe the potential impacts to one or more of the "outstandingly remarkable" resources or stated purposes and mitigation measures proposed.

## APPENDICIES:

1. List of all attachments to this document. **See Project Narrative.**
2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries. **See Appendix A: Figure 1**
3. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities. **See Appendix A: Figure 2 (Access Plans)**
4. Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts. **See Appendix A: Figure 2 (Access Plans)**
5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase). **See Appendix A: Figure 2 (Access Plans) and Appendix C: Transmission Line Engineering Document**
6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2). **See Appendix H: MEPA Distribution List and Legal Notice**
7. List of municipal and federal permits and reviews required by the project, as applicable. **See Section 1.2 of the Project Narrative.**
8. Printout of output report from RMAT Climate Resilience Design Standards Tool, available here. **See Appendix G: RMAT**
9. Printout from the EEA EJ Maps Viewer showing the project location relative to Environmental Justice (EJ) Populations located in whole or in part within a 1-mile and 5-mile radius of the project site. **See Appendix A: Figures 3 and 4**

LAND SECTION – all proponents must fill out this section

**I. Thresholds / Permits**

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

**II. Impacts and Permits**

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

| | Existing | Change | Total |
|---|---|---|---|
| Footprint of buildings | _____ | _____ | _____ |
| Internal roadways | _____ | _____ | _____ |
| Parking and other paved areas | _____ | _____ | _____ |
| Other altered areas | _____ | _____ | _____ |
| Undeveloped areas | _____ | _____ | _____ |
| **Total: Project Site Acreage** | __1,202.5____ | __306.2___ | _1,202.5__ |

B. Has any part of the project site been in active agricultural use in the last five years?
__**X**_ Yes ___ No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

C. Is any part of the project site currently or proposed to be in active forestry use?
___ Yes _**X**__ No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ___ Yes _**X**__ No; if yes, describe:

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? _**X**__ Yes___ No; if yes, does the project involve the release or modification of such restriction? ___ Yes _**X**__ No; if yes, describe:

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ___ Yes _**X**__ No; if yes, describe:

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ___ No _**X**__; if yes, describe:

## Consistency

A. Identify the current municipal comprehensive land use plan
Title:_____ _

| | |
|---|---|
| **Town of Ayer Master Plan** | **2017** |
| **Town of Boylston** | **2022** |
| **Town of Grafton** | **2001** |
| **Lancaster Master Plan** | **2007** |
| **Town of Millbury** | **2019** |
| **Town of Shirley Master Plan 2004** | **2004** |
| **Town of Shrewsbury** | **2016** |
| **Town of Sterling** | **2022** |
| **Town of West Boylston** | **2005** |
| **City of Worcester** | **2016** |

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

***Town of Ayer – Master Plan 2017***
*The Ayer Master Plan (2017) represents Ayer's plans regarding: Land Use, Housing, Economic Development Resources, Transportation & Circulation, Infrastructure, and Municipal Services & Facilities.*

*A review of the Town's economic goals has concluded that the focus is on four separate entities: existing conditions, economic resources, formative issues, and recommendations. Ayer's goals for generating the "Smart Growth District" plan to incentivize new, and mixed-use development. The planned improvements to the transmission line corridor align with these objectives by enhancing the dependability of electrical services throughout the region and facilitating the growth of infrastructure within the Town of Ayer.*

*In relation to the effects on open space and alignment with neighboring land uses, the project is located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the town of Ayer's natural, historical, and open space assets. Consequently, the Project aligns with the Town's Master Plan.*

***Town of Boylston – Master Plan 2022***

*The Boylston Master Plan (2022) represents Boylston's plans regarding: Population & Housing, Open Space, Recreation & Natural Resources, Cultural & Historical Resources, Economic Development, Transportation, Town Services & Facilities, and Land Use.*

*The Town's economic development goals look to increase the capacity to facilitate and promote business growth. The proposed improvements to the transmission line corridor align with these objectives by enhancing the dependability of electrical services throughout the region and facilitating the growth of infrastructure within the Town of Boylston.*

*In relation to the effects on open space and alignment with neighboring land uses, the project located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the town of Boylston's natural, historical, and open space assets. Consequently, the Project aligns with the Town's Master Plan.*

***Town of Grafton – Master Plan 2001***
*The Grafton Master Plan (2001) represents Grafton's plans regarding: Land Use, Housing, Economic Development, Resources, Public Facilities, and Traffic & Circulation.*

*An examination of the Town's prospective economic aspirations emphasizes the importance of fostering the growth of local businesses. The proposed improvements to the transmission line corridor are in alignment with these goals. They not only bolster the reliability of electrical services across the region but also enables the expansion of infrastructure within the Town of Grafton.*

*In relation to the effects on open space and alignment with neighboring land uses, the project is located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the town of Grafton's natural, historical, and open space assets. Consequently, the Project aligns with the Town's Master Plan.*

***Town of Lancaster – Master Plan 2007***
*The Lancaster Master Plan (2007) represents Lancaster's plans regarding: Land Use, Housing, Economic Development, Open, Natural Resources & Recreation, Historic & Cultural Resources, and Circulation.*

*Upon further inspection of the Town's economic development, the goals and objectives are centered around the development of a "mixed-use Town Center, including institutional, commercial and residential development." The planned improvements to the transmission line corridor align with these objectives by enhancing the dependability of electrical services throughout the region and facilitating the growth of infrastructure within the Town of Lancaster.*

*In relation to the effects on open space and alignment with neighboring land uses, the project is located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the town of Lancaster's natural, historical, and open space assets. Consequently, the Project aligns with the Town's Master Plan.*

***Town of Millbury – Master Plan 2019***
*The Millbury Master Plan (2019) represents Millbury's plans regarding: Community Engagement & Outreach, Land Use, Housing, Economic Development, Cultural & Historical Resources, Open Space & Recreation, Natural Resources, Water & Energy, Community Facilities & Services, and Transportation.*

*The Town's economic goals center around the creation of a Business Improvement District in downtown Millbury. The planned improvements to the transmission line corridor align with these objectives by enhancing the dependability of electrical services throughout the region and facilitating the growth of infrastructure within the Town of Millbury.*

*In relation to the effects on open space and alignment with neighboring land uses, the project is located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the town of Millbury's natural, historical, and open space assets. Consequently, the Project aligns with the Town's Master Plan.*

***Town of Shirley – Master Plan 2004***
*The Shirley Master Plan (2004) represents Shirley's plans regarding: Resource Protection Goals, Housing Goals, and Economic Development Goals.*

*An evaluation of the Town's economic development goals has determined that there is a specific focus on housing. When it comes to "encouraging new residential development", certain infrastructure amenities will be needed. The planned improvements to the transmission line corridor align with these objectives by enhancing the dependability of electrical services throughout the region and facilitating the growth of infrastructure within the Town of Shirley.*

*In relation to the effects on open space and alignment with neighboring land uses, the project is located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the town of Shirley's natural, historical, and open space assets. Consequently, the Project aligns with the Town's Master Plan.*

***Town of Shrewsbury – Master Plan***
*The Shrewsbury Master Plan (2016) represents Shrewsbury's plans regarding: Land Use, Future Land Use, Economic Development, Public Facilities & Services, Housing, Transportation & Mobility, Natural, Cultural & Historical Resource, and Open Space & Recreation.*

*The Town's economic development plan outlines a commitment to fostering the expansion of biotech and medical production facilities. Moreover, there is strong interest in elevating the town's "BioReady" status to reach even higher levels, pushing the platinum certification further than before. The proposed improvements to the transmission line corridor align with these goals. These enhancements not only reinforce the reliability of electric alignment services across the region but also serve as a catalyst for the expansion of vital infrastructure within the Town of Shrewsbury.*

*In relation to the effects on open space and alignment with neighboring land uses, the project located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the town of Shrewsbury's natural, historical, and open space assets. Consequently, the Project aligns with the Town's Master Plan.*

***Town of Sterling – Master Plan 2022***
*The Sterling Master Plan (2022) represents Sterling's plans regarding: Land Use & Development Patterns, Economic Development, Housing, Natural, Cultural & Historical Resources, Open Space & Recreation, Public Facilities & Services, and Transportation & Circulation.*

*Through goals and actions set forth by the economic development plan, the Sterling Master Plan encourages the Town to expand the use of electric vehicles and charging stations. The planned improvements to the transmission line corridor align with these objectives by enhancing the dependability of electrical services throughout the region and facilitating the growth of infrastructure within the Town of Sterling.*

*In relation to the effects on open space and alignment with neighboring land uses, the project is located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the town of Sterling's natural, historical, and open space assets. Consequently, the Project aligns with the Town's Master Plan.*

***Town of West Boylston – Master Plan 2005***
*The West Boylston Master Plan (2005) represents West Boylston's plans regarding: Land Use & Zoning, Population & Housing, Economic Development, Transportation Network, Open Space & Recreation, Cultural & Historical Resources, Municipal Facilities & Services, and Financial Strategies.*

*An in-depth analysis of the Town's economic development objectives emphasizes a clear imperative for top-tier physical infrastructure. The proposed improvements to the transmission line corridor align with these aspirations. NEP's proposed improvements not only bolster the reliability of electrical services across*

*the region but also play a pivotal role in expediting the growth of essential infrastructure within the Town of West Boylston.*

*In relation to the effects on open space and alignment with neighboring land uses, the project is located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the town of West Boylston's natural, historical, and open space assets. Consequently, the Project aligns with the Town's Master Plan.*

***City of Worcester – Downtown Urban Revitalization Plan (2016)***
*The Downtown Urban Revitalization Plan (2016) speaks on Worcester's plans regarding: Economic Development, Infrastructure, Open Spaces, Historical, and Natural Conditions*

*The Town's economic development goals and actions are consistent with their smart growth objectives. The planned improvements to the transmission line corridor align with these objectives by enhancing the dependability of electrical services throughout the region and facilitating the growth of infrastructure within the City of Worcester.*

*In relation to the effects on open space and alignment with neighboring land uses, the project is located on land or under an easement owned by NEP, and within an establishment transmission line ROW. NEP is committed to implementing all required measures to prevent any impact to the City of Worcester's natural, historical, and open space assets. Consequently, the Project aligns with the City's Plan.*

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

Title:_____ Date_____

***Montachusett Regional Planning Commission (MRPC):*** *Montachusett Region Comprehensive Economic Development Strategy (2019)*
***Central Massachusetts Regional Planning Commission:*** *Shared Planner Best Practices (2017)*
***Metropolitan Area Planning Council:*** *Clean Energy*

D. Describe the project's consistency with that plan with regard to:
1) economic development _____
2) adequacy of infrastructure _____
3) open space impacts _____

*The Project is located within the areas covered by the Montachusett Regional Planning Commission (MRPC), Central Massachusetts Regional Planning Commission (CMRPC), and Metropolitan Planning Commission (MAPC).*

***Montachusett Regional Planning Commission (MRPC): Montachusett Region Comprehensive Economic Development Strategy (2019)***

*The MRPC Montachusett Region Comprehensive Economic Development Strategy, adopted in July of 2019, places a strong emphasis on the development of commercial and industrial land. As expansions in these sectors continue to grow, there is a growing recognition of the need for enhanced transit programs. These initiatives go hand in hand, creating opportunities for workforce development.*

*As previously stated, the main objective of this Project is to undertake necessary upgrades and enhancements to the existing electrical transmission system. This is crucial to ensure the continued delivery of safe and reliable power while maintaining compliance with both regional and national electric standards. These services play a vital role in promoting the overall well-being of the communities within the*

*Montachusett Planning Region and align with the economic development objectives outlined in the region plan.*

***Central Massachusetts Regional Planning Commission: Shared Planner Best Practices (2017)***

*The Shared Planner Program offered by CMRPC establishes a set of best practices that municipalities within this region are encouraged to adhere to. The Shared Planner Program has focused on the pursuit of economic development opportunities to stimulate increased activity. Therefore, the proposed project, which involves the enhancement and refurbishment of the transmission line corridor, aligns with and contributes to the overarching regional objectives set forth by CMRPC.*

***Metropolitan Area Planning Council: Clean Energy***

*Within the framework of the MAPC program, there are robust initiatives aimed at promoting the adoption of clean technologies and fostering innovation within communities. This encompasses a commitment to increasing the generation of renewable energy by enhancing electrical capacity and reliability.*

*The proposed Project, involving the refurbishment of the transmission line corridor, align with the broader development objectives of the program. The Project supports the expansion of mixed-use, commercial, and industrial development, as well as the creation of more affordable housing, in line with the program's strategic goals.*

## *RARE SPECIES SECTION*

**I. Thresholds / Permits**

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

***NEP is consulting with NHESP for all impacts to rare species or habitat and will mitigate impacts based on their recommendation.***

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

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

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

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

**II. Impacts and Permits**

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

B. If yes,

1. Have you consulted with the Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP)? _**X**__Yes ___No;

if yes, have you received a determination as to whether the project will result in the “take” of a rare species? ___ Yes _**X**_ No; if yes, attach the letter of determination to this submission.

***The consultation with NHESP is still ongoing.***

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

***The consultation with NHESP is still ongoing.***

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

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

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

***A survey for the state-listed rare plant species was conducted in October 2023. No rare plants were found in the Project ROW.***

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

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

***The consultation with NHESP is still ongoing. If after consulting, the project will result in a Take, a Conservation and Management Permit will be prepared to comply with MESA.***

## *WETLANDS, WATERWAYS, AND TIDELANDS SECTION*

**I. Thresholds / Permits**

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

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

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

**II. Wetlands Impacts and Permits**

A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? _**X**__ Yes ___ No; if yes, has a Notice of Intent been filed? ___ Yes _**X**__ No; if yes, list the date and MassDEP file number: _____; if yes, has a local Order of Conditions been issued? ___ Yes _**X**__ No; Was the Order of Conditions appealed? ___ Yes ___ No. Will the project require a Variance from the Wetlands regulations? ___ Yes ___ No.

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

***Temporary impacts include construction matting, soil stockpiling and maneuvering equipment within the limit of disturbance. Temporary impacts are anticipated within areas that are jurisdictional under the MA WPA regulations. Permanent impacts include grading and addition of stone for the construction of work pads and pull pads, and access road improvements. Permanent impacts are anticipated within buffer zones, Riverfront Area (RA) and Bordering Land Subject to Flooding (BLSF). However, there will be no permanent impacts to Bordering Vegetated Wetlands (BVW), Inland Bank or Land Under Water (LUW) as a result of the Project.***

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

| Coastal Wetlands | Area (square feet) or Length (linear feet) | Temporary or Permanent Impact? |
|---|---|---|
| Land Under the Ocean | _____ | _____ |
| Designated Port Areas | _____ | _____ |
| Coastal Beaches | _____ | _____ |
| Coastal Dunes | _____ | _____ |
| Barrier Beaches | _____ | _____ |
| Coastal Banks | _____ | _____ |
| Rocky Intertidal Shores | _____ | _____ |
| Salt Marshes | _____ | _____ |
| Land Under Salt Ponds | _____ | _____ |
| Land Containing Shellfish | _____ | _____ |
| Fish Runs | _____ | _____ |
| Land Subject to Coastal Storm Flowage | _____ | _____ |
| **Inland Wetlands** | | |
| Bank (lf) | **3,054 linear ft** | **Temp** |
| Bordering Vegetated Wetlands | **19.7 acres** | **Temp** |
| Isolated Vegetated Wetlands | _____ | _____ |
| Land under Water | **1.4 acres** | **Temp** |
| Isolated Land Subject to Flooding | _____ | _____ |
| Bordering Land Subject to Flooding | **4.7/3.6 acres** | **Perm/Temp** |
| Riverfront Area | **20.1/4.6 acres** | **Perm/Temp** |

D. Is any part of the project:

1. proposed as a **limited project**? _**X**__ Yes ___ No; if yes, what is the area (in sf)?_entire project___
2. the construction or alteration of a **dam**? ___ Yes _**X**__ No; if yes, describe:
3. fill or structure in a **velocity zone** or **regulatory floodway**? ___ Yes _**X**__ No

4. dredging or disposal of dredged material? ___ Yes _**X**__ No; if yes, describe the volume of dredged material and the proposed disposal site:
5. a discharge to an **Outstanding Resource Water (ORW)** or an **Area of Critical Environmental Concern (ACEC)**? _**X**__ Yes ___ No
6. subject to a wetlands restriction order? ___ Yes _**X**__ No; if yes, identify the area (in sf):
7. located in buffer zones? _**X**__Yes ___No; if yes, how much (in sf) **93.2 acres**_____

E. Will the project:
1. be subject to a local wetlands ordinance or bylaw? _**X**__ Yes ___ No
2. alter any federally-protected wetlands not regulated under state law? ___ Yes _**X**__ No; if yes, what is the area (sf)?

### III. Waterways and Tidelands Impacts and Permits

Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? _**X**__ Yes ___ No;

if yes, is there a current Chapter 91 License or Permit affecting the project site? _**X**_ Yes _ __ No;

if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

***A list of applicable Chapter 91 licenses that apply to the circuits in the ROW is provided in the table below. NEP will further vet this list and investigate its own internal records to develop a final list of applicable Chapter 91 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 |

Does the project require a new or modified license or permit under M.G.L.c.91? ___ Yes _X_ No; **To-be-determined, but assume minor modification at most.**

if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use?
Current ___ Change ___ Total ___

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

For non-water-dependent use projects, indicate the following:
Area of filled tidelands on the site:_____
Area of filled tidelands covered by buildings:_____

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

_____

Does the project include new non-water-dependent uses located over flowed tidelands? Yes ___ No ___

Height of building on filled tidelands_____

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

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

Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ___Yes __**X**_ No;

if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

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

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

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

What type of dredging? Improvement ___ Maintenance ___ Both ____

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

What is the proposed dredge footprint ____length (ft) ___width (ft)____depth (ft);

Will dredging impact the following resource areas?

Intertidal Yes__ No__; if yes, ___ sq ft

Outstanding Resource Waters Yes__ No__; if yes, ___ sq ft

Other resource area (i.e. shellfish beds, eel grass beds) Yes__ No__; if yes __ sq ft

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

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

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

Sediment Characterization

Existing gradation analysis results? __Yes ___No: if yes, provide results.

Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? ___Yes ____No; if yes, provide results.

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

Beach Nourishment ___

Unconfined Ocean Disposal ___

Confined Disposal:

Confined Aquatic Disposal (CAD) ___

Confined Disposal Facility (CDF) ___

Landfill Reuse in accordance with COMM-97-001 ___

Shoreline Placement ___

Upland Material Reuse____

In-State landfill disposal____
Out-of-state landfill disposal ____
*(NOTE: This information is required for a 401 Water Quality Certification.)*

**IV. Consistency**:

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

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

## *WATER SUPPLY SECTION*

**I. Thresholds / Permits**

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes __ **X** _ No; if yes, specify, in quantitative terms:

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

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

**II. Impacts and Permits**

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

| | Existing | Change | Total |
|---|---|---|---|
| Municipal or regional water supply | _____ | _____ | _____ |
| Withdrawal from groundwater | _____ | _____ | _____ |
| Withdrawal from surface water | _____ | _____ | _____ |
| Interbasin transfer | _____ | _____ | _____ |

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

B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? ___ Yes ___ No

C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted? ___ Yes ___ No; if yes, attach a map of the drilling sites and a summary of the alternatives considered and the results. _____

D. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)? _____Will the project require an increase in that withdrawal? ___Yes ___No; if yes, then how much of an increase (gpd)? _____

E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? ___ Yes ___No. If yes, describe existing and proposed water supply facilities at the project site:

| | Permitted Flow | Existing Avg Daily Flow | Project Flow | Total |
|---|---|---|---|---|
| Capacity of water supply well(s) (gpd) | _____ | _____ | _____ | _____ |
| Capacity of water treatment plant (gpd) | _____ | _____ | _____ | _____ |

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

G. Does the project involve:

1. new water service by the Massachusetts Water Resources Authority or other agency of the Commonwealth to a municipality or water district? ___ Yes ___ No
2. a Watershed Protection Act variance? ___ Yes ___ No; if yes, how many acres of alteration?

3. a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities? ___ Yes ___ No

**III. Consistency**

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

## *WASTEWATER SECTION*

**I. Thresholds / Permits**

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

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

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

**II. Impacts and Permits**

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

| | Existing | Change | Total |
|---|---|---|---|
| Discharge of sanitary wastewater | _____ | _____ | _____ |
| Discharge of industrial wastewater | _____ | _____ | _____ |
| TOTAL | _____ | _____ | _____ |

| | Existing | Change | Total |
|---|---|---|---|
| Discharge to groundwater | _____ | _____ | _____ |
| Discharge to outstanding resource water | _____ | _____ | _____ |
| Discharge to surface water | _____ | _____ | _____ |
| Discharge to municipal or regional wastewater facility | _____ | _____ | _____ |
| TOTAL | _____ | _____ | _____ |

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

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

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? ___ Yes ___ No; if yes, describe as follows:

| | Permitted | Existing Avg Daily Flow | Project Flow | Total |
|---|---|---|---|---|
| Wastewater treatment plant capacity (in gallons per day) | _____ | _____ | _____ | _____ |

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

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

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

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

| | Existing | Change | Total |
|---|---|---|---|
| Storage | _____ | _____ | _____ |
| Treatment | _____ | _____ | _____ |
| Processing | _____ | _____ | _____ |
| Combustion | _____ | _____ | _____ |
| Disposal | _____ | _____ | _____ |

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

**III. Consistency**

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

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

## *TRANSPORTATION SECTION (TRAFFIC GENERATION)*

**I. Thresholds / Permit**

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

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

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

**II. Traffic Impacts and Permits**

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

| | Existing | Change | Total |
|---|---|---|---|
| Number of parking spaces | _____ | _____ | _____ |
| Number of vehicle trips per day | _____ | _____ | _____ |
| ITE Land Use Code(s): | _____ | _____ | _____ |

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

| Roadway | Existing | Change | Total |
|---|---|---|---|
| 1. _____ | _____ | _____ | _____ |
| 2. _____ | _____ | _____ | _____ |
| 3. _____ | _____ | _____ | _____ |

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

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

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

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

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

**III. Consistency**

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

## *TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)*

**I. Thresholds**

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

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

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

**II. Transportation Facility Impacts**

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

B. Will the project involve any

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

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

## *ENERGY SECTION*

**I. Thresholds / Permits**

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))? ___ Yes _ **X** _ No; if yes, specify, in quantitative terms:

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

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

**II. Impacts and Permits**

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

| | <u>Existing</u> | <u>Change</u> | <u>Total</u> |
|---|---|---|---|
| Capacity of electric generating facility (megawatts) | _____ | _____ | _____ |
| Length of fuel line (in miles) | _____ | _____ | _____ |
| Length of transmission lines (in miles) | _____ | _____ | _____ |
| Capacity of transmission lines (in kilovolts) | _____ | _____ | _____ |

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

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

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way? ___Yes ___No; if yes, please describe:

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

**III. Consistency**

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

## *AIR QUALITY SECTION*

**I. Thresholds**

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

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

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

**II. Impacts and Permits**

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

| | Existing | Change | Total |
|---|---|---|---|
| Particulate matter | _____ | _____ | _____ |
| Carbon monoxide | _____ | _____ | _____ |
| Sulfur dioxide | _____ | _____ | _____ |
| Volatile organic compounds | _____ | _____ | _____ |
| Oxides of nitrogen | _____ | _____ | _____ |
| Lead | _____ | _____ | _____ |
| Any hazardous air pollutant | _____ | _____ | _____ |
| Carbon dioxide | _____ | _____ | _____ |

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

**III. Consistency**

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

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

## *SOLID AND HAZARDOUS WASTE SECTION*

**I. Thresholds / Permits**

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

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

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

**II. Impacts and Permits**

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

| | Existing | Change | Total |
|---|---|---|---|
| Storage | _____ | _____ | _____ |
| Treatment, processing | _____ | _____ | _____ |
| Combustion | _____ | _____ | _____ |
| Disposal | _____ | _____ | _____ |

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

| | Existing | Change | Total |
|---|---|---|---|
| Storage | _____ | _____ | _____ |
| Recycling | _____ | _____ | _____ |
| Treatment | _____ | _____ | _____ |
| Disposal | _____ | _____ | _____ |

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

D. If the project involves demolition, do any buildings to be demolished contain asbestos?
___ Yes ___ No

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

**III. Consistency**

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

## *HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION*

**I. Thresholds / Impacts**

A. Have you consulted with the Massachusetts Historical Commission? _**X**__ Yes ___ No; if yes, attach correspondence. For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? ____Yes ____ No; if yes, attach correspondence

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

***NEP retained The Public Archaeology Laboratory, Inc. (PAL) to undertake a historic and archaeological review of the Project corridor. PAL conducted a cultural resource due diligence and archaeological sensitivity assessment of the existing 313/343 and P142/O141 lines ROW in the 1st quarter of 2021. The cultural resource due diligence included a file review of previously recorded cultural resources in the Project vicinity, a walkover survey, and an archaeological sensitivity assessment of the ROW to provide information about cultural resources that could be affected by the Project. The file review identified previous archaeological surveys conducted within a half-mile of the existing NEP ROW. The previous surveys multiple historic architectural resources, historic districts, and archaeological sites within the vicinity of the existing 313/343 and P142/O141 lines ROW. As part of the cultural resource due diligence, PAL assessed the existing 313/343 and P142/O141 lines 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 a State Archaeologist's Permit application to the MHC for the 313/343 and P142/O141 lines on May 4, 2022 in two separate submittals, one for each set of transmission lines. On July 6, 2022, the MHC issued Permit #4198 to PAL to conduct the survey for the 313/343 lines and on August 8, 2022, the MHC issued Permit #4204 to PAL to conduct the survey for the P142/O141 lines.***

***PAL conducted an intensive (locational) archaeological survey in 2022 at structure replacement work pad locations and performed additional intensive (locational) archaeological survey for access roads in 2023; PAL plans to perform any necessary limited archaeological mitigation 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 will file a survey report with the MHC in the 1st quarter of 2024. NEP will continue to consult with the MHC 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.***

***PAL plans to perform an historic architectural reconnaissance survey in the 1st quarter of 2024 once the engineering design is further developed and will submit a report to the MHC on the results of the survey in the first half of 2024.***

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

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

**II. Impacts**

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

***NEP's cultural resource consultant, The Public Archaeology Laboratory, Inc. (PAL), conducted an intensive (locational) archaeological survey to identify historic and archaeological resources throughout the Project corridor. NEP does not anticipate that the Project will have any adverse effects on historic properties. However, if any significant historic or archaeological resources are identified within the Project impact footprint, NEP will consult with MHC to avoid, minimize, or mitigate any adverse effects the Project may have on historic properties.***

**III. Consistency**

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

***NEP is coordinating with both the USACE and MHC to avoid adverse effects to historic and archaeological resources eligible for listing in the National Register of Historic Places, to the extent required by law. As part of its Section 404 permit review, pursuant to Section 106 of the National Historic Preservation Act, the USACE will also consult with Native American Tribes that express an interest in historic resources that may be affected by portions of the Project within USACE jurisdiction. NEP has contracted PAL to address the Section 106 concerns of the USACE and seek comments from the MHC and Native American Tribes. PAL conducted background research and a physical inspection of the limits of work associated with the Project. Background research involved a review of existing cultural resource reports and files maintained at PAL and at MHC.***

***PAL completed an intensive (locational) archaeological survey in 2023 and plans to submit a report on the investigations to the MHC and Tribes in the 1st quarter of 2024. NEP will continue to consult with the MHC, USACE, and Native American Tribes throughout the permitting process.***

## CLIMATE CHANGE ADAPTATION AND RESILIENCY SECTION

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

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

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

Climate Change Adaptation and Resiliency Strategies

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

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

A. If no, explain why.

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

***NEP has taken steps to promote climate change adaptation and resiliency in the design of the Project. The access road improvements and creation of permanent work pads will result in a more climate-ready and resilient transmission system that can withstand more extreme weather events.***

***Crews will be able to access structures during emergencies more easily once the improvements are made. In addition, the ACR line and structure work will address existing system capacity shortages and increased demand and support future interconnections from renewable energy projects.***

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

***Please see the Land Section: Consistency portion of this form for how the Project is contributing to regional adaptation strategies.***

II. Has the Proponent considered alternative locations for the project in light of climate change risks? ___ Yes _X__ No

A. If no, explain why.

***The Project will occur within an existing transmission line ROW, which has a fixed location. The Project does not involve construction of new transmission lines or roads within a new ROW. The Project location is limited to the ROW where NEP has existing rights.***

B. If yes, describe alternatives considered.

***N/A***

III. Is the project located in Land Subject to Coastal Storm Flowage (LSCSF) or Bordering Land Subject to Flooding (BLSF) as defined in the Wetlands Protection Act? _**X**__Yes ____No

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

***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. NEP will evaluate any permanent work pads in BLSF on a case-by-case basis to determine whether compensatory flood storage will be required.***

## ENVIRONMENTAL JUSTICE SECTION

### I. Identifying Characteristics of EJ Populations

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

***NEP has identified 77 EJ Populations within 1-mile of the Project Area (i.e., the Designated Geographic Area (DGA)), triggering the MEPA threshold for a Mandatory EIR (Appendix A, Figure 3). 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)***

***Table 11-1 from the EENF Narrative summarizes all 77 EJ Populations present, their EJ Criteria, population, and median income within the DGA and Census Tract.***

**Table 11-1: Massachusetts Department of Public Health (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 |

**Table 11-1: Massachusetts Department of Public Health (DPH) EJ Communities (1-Mile)**

| Municipality | Census Block Group (BG) | Category | Minority Population (%) | Median Income |
|---|---|---|---|---|
| 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 |
| | 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 |

**Table 11-1: Massachusetts Department of Public Health (DPH) EJ Communities (1-Mile)**

| Municipality | Census Block Group (BG) | Category | Minority Population (%) | Median Income |
|---|---|---|---|---|
| | 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 11-1: Massachusetts Department of Public Health (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 |

**Table 11-1: Massachusetts Department of Public Health (DPH) EJ Communities (1-Mile)**

| Municipality | Census Block Group (BG) | Category | Minority Population (%) | Median Income |
|---|---|---|---|---|
| | 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 |
| 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.

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

***The languages that the Project will use to provide public involvement opportunities include Spanish, Brazilian Portuguese, Cape Verdean (aka Spanish and Portuguese Creole) and Chinese. See Section 11.0 of the EENF Narrative for additional information on languages.***

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

***The list of languages identified has not been modified.***

**II. Potential Effects on EJ Populations**

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

***The Project will occur only within the existing ROW, 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, including impacts on soil and vegetation. 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.***

***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 maintenance and emergency needs safely. In addition, the ACR Project scope of installing improved foundations and upgraded replacement structures, this infrastructure will be better suited to withstand strong winds and storm events, as a result of 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.***

***See Section 11.0 in the Project Narrative for additional information on effects and benefits on EJ Populations.***

B. If an EJ population has been identified using the EJ Maps Viewer within 5 miles of the project site, will the project: (i) meet or exceed MEPA review thresholds under 301 CMR 11.03(8)(a)-(b) __ Yes _X No; or (ii) generate150 or more new average daily trips (adt) of diesel vehicle traffic, excluding public transit trips, over a duration of 1 year or more. ___ Yes _X_ No

C. If you answered “Yes” to either question in Section II.B., describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

## III. Public Involvement Activities

A. Provide a description of activities conducted prior to filing to promote public involvement by EJ populations, in accordance with Part II of the MEPA EJ Public Involvement Protocol. In particular:

1. If advance notification was provided under Part II.A., attach a copy of the Environmental Justice Screening Form and provide list of CBOs/tribes contacted (with dates). Copies of email correspondence can be attached in lieu of a separate list.

***See Appendix F for the EJ Screening Form and list of CBOs.***

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

***CBOs were notified via e-mail and notice was published in the Worcester Telegram and Gazette in four different languages that covered the EJ communities. A virtual public meeting was held on March 23rd, 2023. There were no attendees from the public. The EJ screening was also sent again on June 5th, 2023 and again on November 1st. A website has also been set up for the Project.***

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

***Not applicable.***

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

***See Appendix F for the EJ Screening Form and list of CBOs.***

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

***NEP will maintain the distribution list of contacts from the EJ Reference List and any additional contacts that are identified during the virtual meetings and public engagement process. Contacts will receive notifications of the MEPA site visit, summaries of supplemental information submitted to the MEPA office and any other relevant notices or materials issued during the course of the MEPA review. NEP will continue to host a project website, which is available in Spanish and can translated upon request.***

**CERTIFICATIONS:**

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

   (Name) **See Appendix H for Legal Notice Information** (Date) Publication by 12/22

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

Signatures:

| | | | |
|---|---|---|---|
| Erin Whoriskey Cahill | 12/15/23 | Daniel J. Herzlinger | |
| Date | Signature of Responsible Officer or Proponent | Date | Signature of person preparing ENF (if different from above) |

| | |
|---|---|
| Erin Whoriskey | Daniel J. Herzlinger |
| Name (print or type) | Name (print or type) |
| New England Power Company | TRC Companies, Inc |
| Firm/Agency | Firm/Agency |
| 170 Data Drive | 63 Marginal Way |
| Street | Street |
| Waltham, MA 02451 | Portland, ME 04101 |
| Municipality/State/Zip | Municipality/State/Zip |
| 774.364.3445 | 207.274.2655 |
| Phone | Phone |

# EENF Narrative

# 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 the 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 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 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.

TRC Environmental (TRC) has prepared this Expanded Environmental Notification Form (EENF) for compliance with the Massachusetts Environmental Policy Act (MEPA) regulations found at 301 CMR 11.00 as several review thresholds will be triggered. NEP requests that the MEPA allow a Single Environmental Impact Report (SEIR) in accordance with 301 CMR 11.06(8).

## 1.1 Permits Required

This EENF focuses on those elements of the Project that are subject to MEPA and other regulatory review. NEP will obtain all approvals and permits required by federal, state, and local agencies for the Project. Table 1-1 below summarizes the permit approvals required or potentially required for the Project.

**Table 1-1: Permits Required**

| Agency | Permit/Review/Approval |
|---|---|
| **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 |
| United States Environmental Protection Agency (EPA) | National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges and Construction Dewatering Activities/Stormwater Pollution Prevention Plan (SWPPP) |
| **State** | |
| Executive Office of Energy and Environmental Affairs (EOEEA) | MEPA Review/ Certificate from the Secretary |
| Massachusetts Department of Environmental Protection (MassDEP) | Section 401 Individual Water Quality Certification (IWQC) |
| Massachusetts Natural Heritage and Endangered Species Program (NHESP) | Massachusetts Endangered Species Act – Determination of Take or No Take; Conservation and Management Permit (CMP) (if needed) |
| Department of Conservation and Recreation (DCR) | Construction Access Permit<br>Watershed Protection Act (WsPA)Permit |
| Massachusetts Department of Transportation (MassDOT) | State Highway Access Permit |
| **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. |

## 1.2 MEPA Jurisdiction

This Project is undergoing MEPA review because it requires multiple state permits and exceeds MEPA thresholds identified in Table 1-2 below.

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

**Table 1-2: MEPA Thresholds**

| MEPA EIR Thresholds | MEPA 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 EENF is being filed in accordance with 301 CMR 11.06(8). The form included with this submission addresses all the potential impacts of the Project. This narrative supplements the form and provides additional information on those impacts of the Project that have the potential to adversely impact the environment and that are within the subject matter jurisdiction of the required or potentially required state permits.

The aspects of the Project that have the potential to adversely impact the environment include Land Use, Wetlands, Rare Species, Historical and Archaeological Resources, Traffic and Environmental Justice Populations.

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

# 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 full scope of work associated with the Project is depicted on the Access Plans (Appendix A, Figure 2).

## 2.1 Project Purpose and Need

The primary purpose of the Project is to ensure safe access for maintenance and emergency needs of the transmission lines in the ROW. In addition, the Project will address drainage and erosion issues that exist on some of the existing access roads in the ROW through the access road improvements. 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, which includes pole replacements, upgrades to insulator assemblies and upgrades to grounding. The Project will provide safe access and level work areas that will streamline work on future operations and maintenance and allow NEP to be climate ready by having establish access available to respond to emergencies on the ROW more quickly. 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, 115kV 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. 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.

## 2.3 O141/P142 ACR Work

This work involves replacing the existing copperweld shield wires on the P142/O141, 115 kV transmission line with a fiber optic 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.

## 2.4 Proposed Road Types

The Project will involve two types of access road improvements and/or refreshment (Table 2-1). Information on both types of access road improvements and explanation for their need is provided below. These descriptions and locations are also included on the Access Plans (Appendix A - Figure 2). Photos of areas where existing roads will be improved are provided in Appendix B.

More detailed engineering descriptions of the road types are provided in *National Grid's Transmission Line Access Engineering Document* in Appendix C.

**Table 2-1: Road Types**

| Road Type | Description | Comments |
|---|---|---|
| Type R – Refresh Existing | This road type involves adding stone to cap an existing, stable access road. Includes making repairs in accordance with EG-303NE by filling in potholes gullies. Address erosion issues by creating drainage features. This road type does not include any widening. | Maintenance that is not subject to WPA. This is the preferred road type in sensitive areas such as NHESP rare species habitat when possible. |
| 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 Best Management Practices (BMPs) and drainage features. | This is the standard road type proposed along the majority of the ROW. |

## 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 Resource Area Refresh*

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.

### *2.5.2 ROW Maintenance and Installation of BMPs*

Access to the ROW will primarily be through existing access routes held in fee or easement by NEP. Maintenance mowing and brush cutting along the ROW along the proposed roadway improvement areas and permanent work pad locations will be performed to facilitate access to each structure and provide a safe work area for project personnel.

Best Management Practices (BMPs) found in National Grid's *Environmental Guidance Document EG-303NE, ROW Access, Maintenance and Construction BMPS for New England* (EG-303NE) (Appendix D) 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 R roads will involve filling potholes and tire gullies only with clean crushed stone and gravel. Type S roads will involve widening and adding clean crushed stone and gravel. Select Type S roads will require minimal grading and scraping of soils to create a suitable road base.

The clean crushed stone and gravel used on the roads will create a pervious 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 roads proposed through wetlands. Instead, NEP will use construction mats in wetland areas to minimize wetland disturbance and compaction of soils. Temporary construction mat access roads will be removed once construction has been completed.

### *2.5.4 Construct Work Pads*

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. If the ground in the proposed work pad area is level, then 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 (Appendix A, Figure 2) 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. Driven by the transmission voltage and electrical clearance and safety requirements, on Line 313/343, the standard work pad dimensions are 125-feet by 100-feet where space allows. On the O141/P142, the standard work pad dimensions are 100-feet by 100-feet where space allows.

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 (Appendix A, Figure 2) for the construction mat locations. Construction mats will be removed following construction allowing these areas to be restored to the existing condition.

### 2.5.5 Structure Replacements and 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, grounding repairs, 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.

### 2.5.6 Restoration of the 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.

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.

## 2.6 Summary of Impacts

The Project will include both temporary and permanent impacts to Massachusetts Wetlands Protection Act (WPA) resource areas and buffer zones, Areas of Critical Environmental Concerns (ACECs), NHESP habitat and DCR lands due to the comprehensive nature of the refurbishment and access improvements.

Temporary impacts include construction matting, soil stockpiling and maneuvering equipment within the limit of disturbance. Temporary impacts are anticipated within all areas that are jurisdictional under the Massachusetts Wetlands Protection Act (MA WPA), ACECs, NHESP and DCR regulations.

Permanent impacts include grading and addition of stone for the construction of work pads and pull pads, and access road improvements. Permanent impacts are anticipated within buffer zones, Riverfront Area (RA), Bordering Land Subject to Flooding (BLSF), DCR lands, NHESP habitat, and ACECs. However, there will be no permanent impacts to Bordering Vegetated Wetlands (BVW), Inland Bank or Land Under Water (LUW) as a result of the Project. Compensatory flood storage will be provided as required by the WPA should any work pad grading be required in FEMA floodplains that results in a net increase in fill.

While the Project is still assessing techniques to be implemented during the construction of the Project to minimize permanent and temporary impacts, the Project has the potential to impact areas subject to state environmental regulations as summarized in Table 2-2. The access plans provided in Appendix A, Figure 2 depict the maximum extent of the area that will be graded for the work pads. The impacts provided in Table 2-2 below reflect this as well.

NEP first calculated resource area impacts using assumptions that would have allowed maximum flexibility and leeway during construction. When NEP reviewed the level of impact using these assumptions, they quickly decided they would be unacceptably high. Therefore, NEP revisited their initial assumptions to include greater constraints on what would be allowed during construction, thereby reducing the level of resource area impacts. Accordingly, the impacts presented in Table 2-2 have already been significantly reduced through this initial round of review.

NEP is currently working with construction to determine additional ways to reduce impacts specifically to environmentally sensitive areas. The reduction efforts may involve, but are not limited to:

- In areas where work pads are in close proximity to environmentally sensitive areas, construction crews will work from only one side of a work pad to minimize impacts.
- Potentially moving access road locations to lessen direct impacts.
- In environmentally sensitive areas, NEP will aim to reassess and reduce the size of the work pads to minimize impacts.
- Use terraced work pads on steep slopes to minimize grading.

Field visits have been scheduled with the Project team to discuss reduction impacts throughout the ROW.

**Table 2-2: Permanent & Temporary Impacts**

| Resource Areas & Buffer Zones | Permanent Impact (acres) | Temporary Impacts[2] (acres) |
|---|---|---|
| Land Alteration | 306.2 | 19.7 |
| BVW | 0 | 19.7 |
| 100-foot Buffer | 93.2 | 0 |
| Land Under Water | 0 | 1.4 |

2 Temporary impacts in this calculation represent areas that will be matted with timber construction mats.

**Table 2-2: Permanent & Temporary Impacts**

| Resource Areas & Buffer Zones | Permanent Impact (acres) | Temporary Impacts[2] (acres) |
|---|---|---|
| Inland Bank (linear feet) | 0 | 3,054 linear feet |
| Riverfront Area | 20.1 | 4.6 |
| Bordering Land Subject to Flooding | 4.7 | 3.6 |
| Area of Critical Environmental Concern | 54.7 | 3.3 |
| NHESP Rare Species Habitat | 115 | 9.4 |
| DCR WsPA Zones | 20.0 | 2.6 |

## 2.7 Summary of Mitigation Measures

NEP will avoid and/or minimize impacts to natural resources while conducting work on its transmission lines by implementing a set of minimum standard operating procedures and BMPs that are described in EG-303NE (Appendix D). By consistently following the guidelines and implementing these BMPs, NEP ensures that its system is maintained and constructed by trained personnel in a manner that minimizes potential impacts to the environment, adheres to permit conditions, and meets industry standards. General environmental BMPs that NEP has or will implement on this Project include the following:

- Holding a pre-construction meeting with contractor to review permits and BMPs found in EG-303NE.
- Requiring construction crews to attend an Environmental Field Issue (EFI) training to review project access plans and permit conditions in the field.
- Having an Environmental Inspector/Monitor on-site conducting at a minimum, weekly inspections during construction.
- Use and upgrade existing ROW and access roads to avoid new land disturbance, where feasible.
- Completing field investigations to assess constructability and avoid/mitigate sensitive resources.
- 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.
- Refueling any equipment outside RA and buffer zone.
- Agency consultations are ongoing and will incorporate their guidance.
- Work areas within BVW will be temporary only; no permanent fill within BVW is proposed for access, work envelopes or pull pads.

Additional site-specific mitigation measures are discussed in the Land Use, Wetlands & Waterways and NHESP Rare Species sections below as well as in the Section 61 Findings. Additional mitigation measures will be implemented as required by state, federal and local requirements. NEP anticipates that the final mitigation package will be developed during the federal, state and local permitting processes, and that the package will fully address the required permit conditions and agency concerns.

# 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 current transmission lines, create easier access to individual structures for future maintenance, and address some of the drainage and erosion issues from deteriorating access roads in the ROW. 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.

## 3.1 No-Build Alternative

Under the no-build alternative, no improvements to the roads, workpads, structures or transmission lines would be made to the 313/343 and the O141/P142 lines and the identified reliability need discussed in Section 2 would not be met. The no-build alternative would not ensure reliably for customers in Massachusetts. This alternative does not address existing drainage and erosion issues currently along the corridor and does not allow easy access to all of the structures for emergency repair and routine maintenance along the corridor.

## 3.2 Permitting and Upgrading Roads for Each ACR Project Separately

Permitting each ACR project separately would likely have more impacts than the preferred alternative due to mobilizing heavy equipment to the site multiple times. While the impacts from the structure replacements, transmission line upgrades, and work pads for the ACR work would remain the same, the feet of access roads would likely increase. This is because two primary access roads would be upgraded to align closer to each transmission lines (O141/P142 and Line 313/343). This could add up to a substantial increase in access road length and would cause more environmental impact with the additional mobilization of the equipment for the ACR work on each line.

## 3.3 Limited Design Alternative

This alternative includes limiting the design of the Project to address only the most critical asset related issues. 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 address existing drainage and erosion issues 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 emergency needs and to complete the ACR work. 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.

## 3.4 Preferred Alternative

The preferred alternative requires more work and disturbance up-front but creates less disturbance in the future. The preferred alternative addresses existing drainage and erosion issues, allows access for emergency repair and maintenance of structures and transmission lines in the corridor and maintains resiliency for adapting to climate change and the increased frequency of storm events. The preferred alternative 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 Project objectives.

## 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 does not comply with MEPA regulations. 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 Preferred Alternative will best address the Project's 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 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 easement and no disposition of land subject to Article 97 is anticipated.

**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 |
| Squannacook River WCE | Shirley Rod and Gun Club | SHIRLEY |

**Table 4-2: Open Space**

| Site Name | Owner | Municipality |
|---|---|---|
| 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 Concern*

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.

### *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 wherever feasible; however, written approval from DCR or approval through a Construction and Access Permit may be required when significant improvements are made to existing access roads within 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 (Appendix E). It is expected that coordination with DCR will continue throughout Q4 2023 through construction.

### *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 work will take place within 400-feet of either side of the reservoir itself.

## 4.2 Impacts to Land

Permanent land alteration will result from Type R and S road improvements and construction of work pads at structures. These impacts are discussed in the following sections. The access plans provided in Appendix A, Figure 2 depict the maximum extent of the area that will be graded for the work pads. The impacts provided in Table 4-3, 4-4, and 4-5 below reflect this as well. NEP is currently working with construction to determine ways to reduce impacts specifically to environmentally sensitive areas. The reduction efforts may involve, but are not limited to:

- In areas where work pads are in close proximity to environmentally sensitive areas, construction crews can work from one side of a work pad to minimize impacts.
- Potentially moving access road locations to lessen direct impacts.
- In environmentally sensitive areas, NEP will aim to reassess and reduce the size of the work pads to minimize impacts.
- Use terraced work pads on steep slopes to minimize grading.

Field visits have been scheduled with the Project team to discuss reduction impacts throughout the ROW.

### *4.2.1 Article 97/Public Open Space Lands*

Land alteration on protected public open spaces will occur within the existing NEP easement, which is covered by existing agreements that pre-date the protected land designation. Project activities include initial site preparation, which includes vegetation mowing, minor grading and addition of stone for access road improvements and grading and addition of clean crushed stone for work pad construction within the ROW. These activities are consistent with existing land use agreements and NEP's mandate to maintain a reliable bulk transmission system.

There are several other areas where off-ROW access routes traverses protected open space, particularly around the Wachusett Reservoir, but these routes are along well-established approved access roads that require minimal improvements.

There will be no disposition of land subject to Article 97 as part of the Project.

### *4.2.2 Areas of Critical Environmental Concern*

The Project will result in approximately 54.7 acres of permanent impact to ACECs from road improvements and work pad construction. NEP is still assessing ways to minimize impacts to ACECs to the maximum extent feasible and plans to consult with the ACEC Program for guidance on how to best achieve that. However, possible impacts are discussed in Section 4.3 and are summarized in Table 4-3 below.

**Table 4-3: ACEC Impacts**

| ACEC Land | Permanent Impact (acres) |
|---|---|
| Squannassit | 16.2 |
| Petapawag | 22.1 |
| Central Nashua River Valley | 16.5 |
| **Total Permanent Impact** | **54.7** |

### *4.2.3 DCR Land*

Only Type S Road improvements will be made on DCR lands in the Wachusett Reservoir watershed in West Boylston and Sterling MA. In addition, permanent work pads will be constructed on lands owned by DCR. NEP is still assessing avoidance and minimization opportunities; however, potential impacts will be minimized to the maximum extent feasible and are discussed in Section 4.3 and summarized in Table 4-4 below. NEP plans to consult with DCR regarding these impacts to determine appropriate mitigation and minimization measures.

**Table 4-4: DCR Land Impacts**

| DCR Lands by Town | Permanent Impact (AC) |
|---|---|
| West Boylston | 16.0 |
| Sterling | 9.5 |
| **Total Permanent Impact** | **25.6** |

### *4.2.4 DCR Watershed Protection Act Areas*

A total of 20.0 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 4-5 below. NEP plans to consult with DCR's Division of Water Supply Protection regarding these impacts to determine appropriate mitigation and minimization measures.

**Table 4-5: Watershed Protection Zone Impacts**

| Watershed Protection Zone | Permanent Impact (AC) |
|---|---|
| Primary Protection Zone | 11.1 |
| Secondary Protection Act Zone | 8.9 |
| **Total Permanent Impact** | **20.0** |

## 4.3 Mitigation Measures 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-clearing along the Bloomingdale Tap to provide access along an existing railroad line and for proposed pull pad locations. Proposed road upgrades 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. 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. These measures include either reducing the total work pad size by 50% after construction is complete where feasible or loaming and seeding portions of the work pad so vegetation is restored.

Additional measures will be taken on DCR lands and within ACECs to further reduce impacts to land use. NEP will coordinate with the local Wachusett DCR office and the ACEC program, which is also overseen by DCR to solicit staff input on possible land alteration reductions.

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-303) (Appendix D).

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 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.

Environmental Monitors will be responsible for monitoring work when activities occur within rare species habitat. Specific functions to be performed by the scientist will be defined during consultation with NHESP (see Section 6.0: Rare Species).

# 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, impacts to these resource areas and impact avoidance and minimization strategies that will be implemented during construction.

## 5.1 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 MassDEP Wetlands 1:12,000 Datalayer
- MassGIS 2023 NHESP Priority Habitats of Rare Species
- MassGIS 2023 NHESP Estimated Habitats 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 (Table 5-1; Appendix A, Figure 2).

#### 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), 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 (Appendix A, Figure 2).

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-DHJ-100 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-DJH-1 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-1 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-3 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-3 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-4 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-5 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-5 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-5 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DJH-6 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-DMC-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-1 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-1 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-2 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-2 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-DMC-3 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-3 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-4 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-4 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-4 | PUB | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-5 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-DMC-6 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-GAR-1 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BOYLSTON |
| W-GAR-1 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-GAR-10 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GAR-100 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-GAR-11 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GAR-12 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GAR-13 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GAR-14 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GAR-15 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GAR-16 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GAR-17 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GAR-18 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-19 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-GAR-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-GAR-20 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-21 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-22 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-23 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-24 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-25 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-26 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-27 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-28 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-29 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-3 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-GAR-3 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-GAR-30 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-31 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-32 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-32 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-33 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-34 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-35 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-36 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-37 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-38 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-GAR-39 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-4 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-GAR-4 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-GAR-4 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-GAR-40 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-41 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-GAR-43 | PEM | USACE/MassDEP/Local | 100-ft buffer zone/25-ft No-Alteration Zone | LANCASTER |
| W-GAR-5 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-6 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-7 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-GAR-8 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GAR-9 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-GR-42 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-HSW-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-HSW-3 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-JDB-1 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-JGB-30 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-JGB-31 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-JMT-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-JMT-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-JMT-3 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-JMT-4 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-JMT-5 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-JMT-6 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-JMT-7 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-JMT-8 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-KCF-10 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-11 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-12 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-13 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-14 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-15 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-16 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-17 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-18 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-19 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-KCF-20 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-20 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-21 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-KCF-21 | PFO | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-KCF-22 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-KCF-22 | PFO | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-KCF-23 | PUB | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-KCF-23 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-KCF-23 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-KCF-24 | PSS | USACE/MassDEP/Local | 100-ft buffer zone/25-ft No-Alteration Zone | LANCASTER |
| W-KCF-25 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-KCF-26 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-KCF-27 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-KCF-28 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-KCF-29 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-KCF-3 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-KCF-4 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | AYER |
| W-KCF-5 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-6 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-7 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-8 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-KCF-9 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-MBF-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | GRAFTON |
| W-MBF-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-1 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-10 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-11 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-MBF-12 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | GRAFTON |
| W-MBF-12 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-12 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-12 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-12 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-13 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | GRAFTON |
| W-MBF-14 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-15 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-16 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-17 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-18 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-18 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-19 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-20 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-20 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-21 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-22 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BOYLSTON |
| W-MBF-22 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BOYLSTON |
| W-MBF-22 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-22 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-MBF-22 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-MBF-23 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BOYLSTON |
| W-MBF-23 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BOYLSTON |
| W-MBF-24 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BOYLSTON |
| W-MBF-24 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BOYLSTON |
| W-MBF-25 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BOYLSTON |
| W-MBF-25 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BOYLSTON |
| W-MBF-26 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | WEST BOYLSTON |
| W-MBF-4 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-5 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-6 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-6 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-7 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-8 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-9 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MBF-9 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-1 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-MJR-10 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-10 | PFO | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-11 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-12 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-13 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-13 | PFO | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-MJR-14 | PFO | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-14 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-14 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-15 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-16 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-16 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-16 | PFO | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-17 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-17 | PFO | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-18 | PSS | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-19 | PEM | USACE/MassDEP/Local | 100-foot buffer zone/25-foot No-Alteration Zone | LANCASTER |
| W-MJR-2 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-MJR-20 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-20 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-21 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-22 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-23 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-24 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-25 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-26 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-27 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-28 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-MJR-29 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-29 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-3 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-MJR-3 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-MJR-30 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-31 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-32 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |
| W-MJR-4 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-MJR-5 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-MJR-5 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | STERLING |
| W-MJR-6 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-MJR-7 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-MJR-8 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-MJR-8 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-MJR-9 | PFO | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-MJR-9 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHIRLEY |
| W-THE-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-THE-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-THE-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-THE-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-THE-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-THE-3 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |

**Table 5-1: Delineated Wetlands and Waterbodies**

| Wetland Field Designation | Field Designated NWI Classification [1] | Assumed Jurisdictional Status | Assumed Buffer/ Setback Requirements | Town |
|---|---|---|---|---|
| W-THE-4 | PEM | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-TRS-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-TRS-2 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-TRS-3 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| W-TRS-3 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | SHREWSBURY |
| WF-KCF-1 | PSS | USACE/MassDEP/Local | 100-foot buffer zone | MILLBURY |

[1] *The Classification of Wetlands and Deepwater Habitats of the United States, Second Edition* (Federal Geographic Data Committee, 2013). Categories include Palustrine Forested (PFO), Palustrine Emergent (PEM) and Palustrine Shrub/Scrub (PSS).

Out of the 225 wetlands TRC delineated, 57 are 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 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 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

Table 5-2 shows the 85 streams that were delineated during the September 2020 resource delineation effort and the June 2023 resource delineation effort refresh (Appendix A, Figure 2). Some of the major named rivers and streams within the ROW are Nashua River, Quinsigamond River, and Flint Pond. Out of the 85 delineated streams, there are 43 perennial streams, 39 intermittent streams, four ephemeral streams, two lakes, and three ponds. Some of the larger perennial rivers and waterbodies are likely subject to the Chapter 91 Waterways regulations.

**Table 5-2: Delineated Streams**

| Stream Field Designation | Stream Type | Assumed Jurisdictional Status | Assumed Buffer/Setback Requirements | Delineation Type | Town |
|---|---|---|---|---|---|
| S-DJH-6 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | CENTERLINE | GRAFTON |
| S-DJH-6 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | MILLBURY |
| S-DJH-7 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | MILLBURY |
| S-DJH-7 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | MILLBURY |
| S-DMC-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | WEST BOYLSTON |
| S-DMC-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | WEST BOYLSTON |
| S-DMC-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | WEST BOYLSTON |
| S-DMC-2 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-DMC-2 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-DMC-3 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | WEST BOYLSTON |
| S-GAR-1 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | WEST BOYLSTON |
| S-GAR-1 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-GAR-1 | EPHEMERAL | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-GAR-1 | LAKE | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | WEST BOYLSTON |
| S-GAR-1 | LAKE | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | WEST BOYLSTON |
| S-GAR-10 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | STERLING |
| S-GAR-12 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | STERLING |
| S-GAR-13 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | STERLING |
| S-GAR-14 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area /25-foot no-alteration zone | BANK/EDGE | LANCASTER |

**Table 5-2: Delineated Streams**

| Stream Field Designation | Stream Type | Assumed Jurisdictional Status | Assumed Buffer/Setback Requirements | Delineation Type | Town |
|---|---|---|---|---|---|
| S-GAR-14 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area /25-foot no-alteration zone | BANK/EDGE | LANCASTER |
| S-GAR-14 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area /25-foot no-alteration zone | BANK/EDGE | LANCASTER |
| S-GAR-14 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area /25-foot no-alteration zone | BANK/EDGE | LANCASTER |
| S-GAR-15 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area /25-foot no-alteration zone | BANK/EDGE | LANCASTER |
| S-GAR-16 | EPHEMERAL | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | LANCASTER |
| S-GAR-18 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area /25-foot no-alteration zone | BANK/EDGE | LANCASTER |
| S-GAR-19 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area /25-foot no-alteration zone | BANK/EDGE | LANCASTER |
| S-GAR-19 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area /25-foot no-alteration zone | BANK/EDGE | LANCASTER |
| S-GAR-2 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | WEST BOYLSTON |
| S-GAR-2 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | SHREWSBURY |
| S-GAR-3 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-GAR-4 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-GAR-5 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-GAR-6 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | STERLING |
| S-GAR-6 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | STERLING |
| S-GAR-7 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | AYER |
| S-GAR-8 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | STERLING |
| S-GAR-9 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | STERLING |

**Table 5-2: Delineated Streams**

| Stream Field Designation | Stream Type | Assumed Jurisdictional Status | Assumed Buffer/Setback Requirements | Delineation Type | Town |
|---|---|---|---|---|---|
| S-GR-18 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area/25-foot no-alteration zone | BANK/EDGE | LANCASTER |
| S-JDB-1 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | MILLBURY |
| S-JDB-2 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | MILLBURY |
| S-JDB-3 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | MILLBURY |
| S-JMT-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area/25-foot no-alteration zone | CENTERLINE | LANCASTER |
| S-JMT-100 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area/25-foot no-alteration zone | CENTERLINE | LANCASTER |
| S-KCF-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | AYER |
| S-KCF-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | MILLBURY |
| S-KCF-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | AYER |
| S-KCF-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | AYER |
| S-KCF-10 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-KCF-100 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | SHREWSBURY |
| S-KCF-2 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | AYER |
| S-KCF-2 | PERENNIAL | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | SHIRLEY |
| S-KCF-2 | PERENNIAL | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | SHIRLEY |
| S-KCF-3 | <Null> | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone | BANK/EDGE | SHIRLEY |
| S-KCF-3 | <Null> | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone | BANK/EDGE | SHIRLEY |

**Table 5-2: Delineated Streams**

| Stream Field Designation | Stream Type | Assumed Jurisdictional Status | Assumed Buffer/Setback Requirements | Delineation Type | Town |
|---|---|---|---|---|---|
| S-KCF-4 | PERENNIAL | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | SHIRLEY |
| S-KCF-5 | PERENNIAL | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | SHIRLEY |
| S-KCF-6 | INTERMITTENT | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone | CENTERLINE | SHIRLEY |
| S-KCF-7 | PERENNIAL | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone/200-ft Riverfront Area | BANK/EDGE | SHIRLEY |
| S-KCF-8 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-KCF-9 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-MBF-1 | POND | USACE/MassDEP/Local | 100-foot buffer zone/25-foot Wetland Setback | BANK/EDGE | GRAFTON |
| S-MBF-1 | POND | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | SHREWSBURY |
| S-MBF-18 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | SHREWSBURY |
| S-MBF-2 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | WEST BOYLSTON |
| S-MBF-22 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | BOYLSTON |
| S-MBF-22 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | SHREWSBURY |
| S-MJR-1 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | STERLING |
| S-MJR-1 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | STERLING |
| S-MJR-2 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | STERLING |
| S-MJR-3 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | BANK/EDGE | STERLING |
| S-MJR-4 | EPHEMERAL | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone | CENTERLINE | SHIRLEY |

**Table 5-2: Delineated Streams**

| Stream Field Designation | Stream Type | Assumed Jurisdictional Status | Assumed Buffer/Setback Requirements | Delineation Type | Town |
|---|---|---|---|---|---|
| S-MJR-5 | EPHEMERAL | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone | CENTERLINE | SHIRLEY |
| S-MJR-7 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area/25-foot no-alteration zone | BANK/EDGE | LANCASTER |
| S-MJR-7 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area/25-foot no-alteration zone | CENTERLINE | LANCASTER |
| S-MJR-7 | <Null> | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | LANCASTER |
| S-MJR-8 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | MILLBURY |
| S-MJT-1 | INTERMITTENT | USACE/MassDEP/Local | 25-foot-wide undisturbed area/100-foot buffer zone | CENTERLINE | SHIRLEY |
| S-OSS-1 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | MILLBURY |
| S-OSS-2 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | WEST BOYLSTON |
| S-OSS-3 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | WEST BOYLSTON |
| S-SFP-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | MILLBURY |
| S-THE-1 | POND | USACE/MassDEP/Local | 100-foot buffer zone | BANK/EDGE | SHREWSBURY |
| S-THE-2 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | SHREWSBURY |
| S-THE-3 | INTERMITTENT | USACE/MassDEP/Local | 100-foot buffer zone | CENTERLINE | SHREWSBURY |
| S-TRS-1 | PERENNIAL | USACE/MassDEP/Local | 100-foot buffer zone/200-foot Riverfront Area | CENTERLINE | SHREWSBURY |

### 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 WPA and federal Clean Water Act.

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 5-3.

**Table 5-3: Delineated Vernal Pools**

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

**Table 5-3: Delineated Vernal Pools**

| ID | NHESP Status | Town |
|---|---|---|
| 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 Wetland and Waterway Impacts

The access plans provided in Appendix A, Figure 2 depict the maximum extent of the area that will be graded for the work pads. The impacts summarized below reflect this as well. NEP is currently working with construction to determine ways to reduce impacts specifically to environmentally sensitive areas. The reduction efforts may involve, but are not limited to:

- In areas where work pads are in close proximity to environmentally sensitive areas, construction crews from one side of a work pad to minimize impacts.
- Potentially moving access road locations to lessen direct impacts.
- In environmentally sensitive areas, NEP will aim to reassess and reduce the size of the work pads to minimize impacts.
- Use terraced work pads on steep slopes to minimize grading.

Field visits have been scheduled with the Project team to discuss reduction impacts throughout the ROW.

### *5.2.1 Temporary Impacts*

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. 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.

### *5.2.2 Permanent Impacts*

The Project will result in permanent impacts to the 100-foot buffer zone of wetlands or streams, RA, and BLSF from the construction of work pads, pull pads and road access upgrades.

Per 310 CMR 10.58(2)(a), RA is "the area of land between a river's mean annual high-water line and a parallel line measured horizontally." Riverfront areas begin at the mean annual high water

and/or top of bank line of perennial streams that were delineated in the field. Approximately 20.1 acres of RA will be permanently impacted for the construction of work pads, pull pads and access road upgrades. Road upgrades will involve limited grading and addition of stone to existing access roads, while work pad construction will involve more extensive grading in RA depending on the topography.

Per 310 CMR 10.57(2), BLSF is "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 BVW 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 (currently administered by the FEMA, successor to the United States Department of Housing and Urban Development). Construction of work pads, pull pads and access road upgrades will result in 4.7 acres of permanent impact from grading and the addition of stone. Within BLSF, NEP will aim to excavate out and install the fill so there is no net change in flood storage (i.e., no net fill). If it is not possible to build the work pad in BLSF without having no net fill, compensatory flood storage will be provided. As the Project design advances and moves into WPA permitting with Conservation Commissions, NEP will work to reduce work pad impacts within BLSF by minimizing their size or making them temporary wherever possible.

## 5.3 Mitigation Measure for Wetlands and Waterways

Impacts to BVW, LUW and Inland Bank are all temporary from the placement of construction mats. 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, BLSF 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 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. Although work will occur in a regulated area, BMPs will be utilized and temporarily disturbed areas will be restored after the work is complete. Work pads in BLSF and RA will be reduced by 50% once work is completed or they will be loamed and seeded to help restore vegetation. 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 D).

BMPs that will be implemented include:

- having an Environmental Inspector/Monitor on-site during construction;
- avoiding 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 Priority Habitat (PH) and Estimated Habitat (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 Impacts to Rare Species

Permanent impacts to NHESP Priority and Estimated Habitat areas are anticipated to be 41.03 acres for work pads, pull pads, and road upgrades. 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).

NEP met virtually with NHESP on April 4, 2023, to review the project in its preliminary stage and will continue to work closely with NHESP as Project design and consultation continues (Appendix E). NEP is preparing a Massachusetts Endangered Species Act (MESA) checklist and will implement the necessary actions to avoid, minimize, and mitigate Project-related impacts in accordance with the O&M Plan. In Priority Habitat, 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 we will work with NHESP to avoid and minimize these activities to the greatest extent practicable.

As previously mentioned, the access plans provided in Appendix A, Figure 2 depict the maximum extent of the area that will be graded for the work pads. The impacts provided previously in Table 4-3, 4-4, and 4-5 reflect this as well. NEP is currently working with construction to determine ways to reduce impacts specifically to environmentally sensitive areas. The reduction efforts may involve, but are not limited to:

- In areas where work pads are proposed in close proximity to environmentally sensitive areas, construction crews can work from one side of a work pad to minimize impacts.
- Potentially moving access road locations to lessen direct impacts.
- In environmentally sensitive areas, NEP will aim to reassess and reduce the size of the work pads to minimize impacts.
- Use terraced work pads on steep slopes to minimize grading.

Field visits have been scheduled with the Project team to discuss reduction impacts throughout the ROW.

## 6.3 Proposed Mitigation Measures

NEP will 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
- 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
- Species Protection Plans
- EFI training to all construction personnel
- Extensive “sweeps” and monitoring during construction
- Restoration of work pad impacts
- Protective enclosure and fencing

Mitigation efforts will be refined during the field visits mentioned above and demonstrated in the SEIR. 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 Traffic

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'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 prior to 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.

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. Prior to use of off-ROW access roads, permission will be obtained from private landowners.

## 8.0 Air Quality

There will be no permanent increase in air emissions as a result of the Project, since no new air emissions sources are being proposed. However, temporary increases in emissions will occur during Project construction.

A number of different vehicles and equipment will be utilized during construction. These range from pick-up trucks to bulldozers, bucket trucks, dump trucks and excavators. Any 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 construction will either be USEPA Tier 4-compliant or will be retrofitted with USEPA-verified (or equivalent) emission control devices such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) and installed on the exhaust system side of the diesel combustion engine. NEP requires the use of ultra-low sulfur diesel fuel in its diesel-powered construction equipment and limits idling time to five (5) minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts. Vehicle idling is to be minimized during construction activities, in compliance with Massachusetts Anti-idling Law, G.L. c. 90 § 16A, c. 111 §§ 142A – 142M, and 310 CMR 7.11.

# 9.0 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 October 2019. The cultural resource due diligence included a file review of previously recorded cultural resources in the Project vicinity, a walkover survey, and an 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 conducted within a half-mile of the existing NEP ROW and multiple inventoried historic and archaeological resources along the Project ROW. As part of the cultural resource due diligence, 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 Historic Commission (MHC) for the 313/343 and O141/P142 lines on May 4, 2022, and on July 26, 2022, the MHC issued Permit #4198 to PAL to conduct the survey for the 313/343 ROW; on August 8, 2022, MHC issued Permit #4204 to PAL to conduct the survey for the O141/P142 ROW. 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 E for a record of correspondence.

PAL conducted an intensive (locational) archaeological survey in 2022 and 2023 at structure replacement work pad locations and access roads; 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 1st half of 2024. 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.

PAL also plans to perform an historic architectural reconnaissance survey in 2023 and will submit a report to the MHC on the results of the survey in the 1st half of 2024.

# 10.0 Greenhouse Gas (GHG) Emissions

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

The Project will not be considered a damage to the environment with regards to air pollution, including greenhouse gas emissions. No buildings, generators, SF6 equipment are proposed as part of this Project and it does not have any emissions sources that require analysis under the MEPA GHG Protocol.

Additionally, NEP will take measures to limit idling times during construction and to reduce air emissions, including the following:

- In Massachusetts, any 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 construction will either be USEPA Tier 4-compliant or will be retrofitted with 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.
- The Companies require 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.
- Vehicle idling is to be minimized during construction activities, in compliance with the following:
    - Massachusetts Anti-idling Law, G.L. c. 90 § 16A, c. 111 §§ 142A – 142M, and 310 CMR 7.11.
- Exposed soils on access roads will be wetted and stabilized as necessary to suppress dust generation during construction.

Therefore, this Project does not have impacts significant enough to require GHG analysis from the Secretary.

# 11.0 Environmental Justice

The Project was identified to have potential impacts on the EJ Populations under Section 58 of Chapter 8 of the Acts of 2021*: An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy* (the Act). The following sections are consistent with the MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations (MEPA EJ Protocol) that addresses new requirements for MEPA project filings, an update to the EOEEA EJ Policy, and a more in-depth public involvement component.

## 11.1 Applicability of EIR Requirement

Section 58 of the Act requires that an EIR be submitted "for any project that is likely to cause damage to the environment and is located within a distance of 1 mile of an EJ Population; or if a project impacts air quality, for any project that is likely to cause damage to the environment and is located within a distance of 5 miles of an EJ Population".

NEP has identified 77 EJ Populations within 1-mile of the Project Area (i.e., the Designated Geographic Area (DGA)), triggering the MEPA threshold for a Mandatory EIR (Appendix A, Figure 3). 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)[3]

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

Table 11-1 summarizes all 77 EJ Populations present, their EJ Criteria, population, and median income within the DGA and Census Tract.

**Table 11-1: Massachusetts Department of Public Health (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 |

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

**Table 11-1: Massachusetts Department of Public Health (DPH) EJ Communities (1-Mile)**

| Municipality | Census Block Group (BG) | Category | Minority Population (%) | Median Income |
|---|---|---|---|---|
| | 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 |
| | 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 |

**Table 11-1: Massachusetts Department of Public Health (DPH) EJ Communities (1-Mile)**

| Municipality | Census Block Group (BG) | Category | Minority Population (%) | Median Income |
|---|---|---|---|---|
| | 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 |
| | 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 |

**Table 11-1: Massachusetts Department of Public Health (DPH) EJ Communities (1-Mile)**

| Municipality | Census Block Group (BG) | Category | Minority Population (%) | Median Income |
|---|---|---|---|---|
| | 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 |
| 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.

In addition, NEP identified 200 EJ communities present within a 5-mile radius of the Project Area, but this Project did not trigger the 5-mile radius requirement due to lack of air pollution expected as discussed previously in Section 8.0.

### *11.1.1 Public Involvement*

Per 301 CMR 11.05(4)(b), Advance Notification of the Project was sent via electronic mail on February 28, 2023, by NEP to all contacts on the EJ Reference List, provided by the MEPA Office on February 2, 2023, on June 5, 2023, and again on November 1, 2023.

The Advanced Notification included several translations of the EJ Screening Form (Appendix F), provided by the MEPA Public Involvement Protocol for Environmental Justice Populations (MEPA EJ Public Involvement Protocol). The EJ Screening Form was translated into Spanish, Brazilian Portuguese, Cape Verdean (aka Spanish and Portuguese Creole) and Chinese and each translation was attached to the notification sent to the EJ Reference List. A copy of the EJ Screening Form is provided in Appendix F.

NEP has undertaken measures to promote public involvement into the MEPA process through meaningful community outreach and engagement. NEP consulted the MEPA EJ Public Involvement Protocol to determine the appropriate community engagement strategies for this Project. These involvement methods were discussed and supported by the MEPA Office during a Pre-Filing Consultation held on February 2, 2023.

A public website, available in English, Spanish, Brazilian Portuguese, Cape Verdean (aka Spanish and Portuguese Creole) and Chinese, 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 website address, www.centralmassreliability.com, was also provided on the EJ Screening Form.

Additionally, NEP hosted a virtual informational meeting on March 23, 2023. Information pertaining to this meeting was provided to the EJ Reference List via electronic mail on February 28, 2023. 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. NEP has established a Project-specific email address (info@centralmassreliability.com) for community members to ask any remaining questions they may have. To date, no comments or questions have been received from the public on the Project.

As indicated, seven (7) English Isolation EJ Populations were identified within the DGA. NEP contacted each of these municipalities to confirm that the languages spoken other than English were limited to Spanish, Brazilian Portuguese, Cape Verdean (aka Spanish and Portuguese Creole) and Chinese. Based on this information, the EJ Screening Form, meeting invitation and meeting invitation advertisement were translated into Spanish, Brazilian Portuguese, Cape Verdean (aka Spanish and Portuguese Creole) and Chinese. Interpretation services were provided at the public meeting.

In the case that additional contacts are identified during the virtual meetings and public engagement process, NEP will update the distribution list of contacts from the EJ Reference List. Contacts will receive notification of the MEPA site visit, summaries of supplemental information

submitted to the MEPA Office and any other relevant notices or materials issued during the course of the MEPA review.

## 11.2 Assessment of Existing Unfair or Inequitable Environmental Burden

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, a RMAT tool survey, EPA "EJ Screen" tool survey, and feedback from the MEPA office.

### *11.2.1 Vulnerable Health Criteria*

The DPH's Bureau of Environmental Health worked with the 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.[4] 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 11-1 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 only four municipalities present within the DGA meet at least vulnerable health EJ criteria (Table 11-2). Although these surveys identify vulnerable health EJ criteria within the DGA, due to the nature of the work, the Project has limited potential to exacerbate an unfair or unequitable environmental burden and related public health consequences.

**Table 11-2: Vulnerable Health EJ Criteria (1-Mile)**

| Municipality | EJ and Vulnerable Health EJ Criteria Status | Vulnerable Health Topic EJ Criteria Met | Rate per 1,000[5]* |
|---|---|---|---|
| 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 |

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

**Table 11-2: Vulnerable Health EJ Criteria (1-Mile)**

| Municipality | EJ and Vulnerable Health EJ Criteria Status | Vulnerable Health Topic EJ Criteria Met | Rate per 1,000[5]* |
|---|---|---|---|
| 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 | | | |

### *11.2.2 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 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, MBTA bus and rapid transit, other transportation infrastructure, regional transit agencies, and energy generation and supply.

TRC used this data to create Figure 4 in Appendix A, which shows the potential sources of pollution within one mile (see Table 11-3). 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.

**Table 11-3: 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 |

**Table 11-3: Other Potential Sources of Pollution within EJ Populations (1-Mile)**

| Facility Type | Number of Pollutant Sources within One Mile of the Project |
|---|---|
| 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.

### *11.2.3 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 50$^{th}$ percentile are outlined in Table 11-4. Pollution or sources not listed in a given municipality are below the 50th percentile for the block groups within the DGA.

**Table 11-4: 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 11-4: 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 |
| | Traffic Proximity | Block Group 5, Tract 7303 | Less than 50th percentile |

**Table 11-4: EJ Screen Environmental Indicators by Percentile**

| Town | Pollution and Source | Census Block Group | State 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 |
| | | 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 |

**Table 11-4: EJ Screen Environmental Indicators by Percentile**

| Town | Pollution and Source | Census Block Group | State 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 | |
| | | 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 | |

**Table 11-4: EJ Screen Environmental Indicators by Percentile**

| Town | Pollution and Source | Census Block Group | State Percentile |
|---|---|---|---|
| | | 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 |
| | | 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 |

**Table 11-4: EJ Screen Environmental Indicators by Percentile**

| Town | Pollution and Source | Census Block Group | State 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 |
| | | 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 |

**Table 11-4: EJ Screen Environmental Indicators by Percentile**

| Town | Pollution and Source | Census Block Group | State 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 |
| | 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 |
| | | 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 |

**Table 11-4: EJ Screen Environmental Indicators by Percentile**

| Town | Pollution and Source | Census Block Group | State 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 |
| | | 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 |

**Table 11-4: EJ Screen Environmental Indicators by Percentile**

| Town | Pollution and Source | Census Block Group | State 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 |
| | | 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 |

**Table 11-4: EJ Screen Environmental Indicators by Percentile**

| Town | Pollution and Source | Census Block Group | State Percentile |
|---|---|---|---|
| | | Block Group 1, Tract 7371 | 88th percentile |
| | | Block Group 2, Tract 7511.01 | 87th percentile |

### *11.2.4 Feedback from Public Meeting Pursuant to MEPA EJ Public Involvement Protocol*

No issues or concerns were raised during the virtual public meeting held on March 23, 2023, or after the notices were sent out.

### *11.2.5 Unfair or Inequitable Analysis*

Based on the results from the MA DPH EJ Tool, there are EJ Populations that are located within a municipality or census tract demonstrating vulnerable health EJ criteria. However, the Project has low potential to exacerbate 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.

## 11.3 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.

### *11.3.1 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 only within the existing ROW, 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, including impacts on soil and vegetation. 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.

### *11.3.2 Potential Environmental and Public Health Impacts and Proposed Mitigation*

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

**General BMPS**

NEP will obtain and comply with all Federal, State, and Local approvals prior to construction start including submitted a Notice of Intent the USEPA under the NPDES Stormwater Construction General Permit for Stormwater Discharge from Construction Activities. As required under this program, a construction 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 Best Management Practices (EG-303).

In addition, NEP will implement the following general BMPs when working in EJ Communities:

- Ensure contractors comply with the Massachusetts Anti-idling Law.
- Requiring construction crews to attend an Environmental Field Issue (EFI) training to review project access plans and permit conditions in the field.
- Having an Environmental Inspector/Monitor on-site conducting at a minimum, weekly inspections during construction.
- 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.

**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 do 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, access to Protected Land and Open Space within EJ Populations will not be impacted. Additionally, there are no EJ Populations within DCR Land within the Project ROW.

**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 train lines and roads, 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. No road closures or phase traffic maintenance will be required during the Project's construction. Further, no impacts are anticipated to public transit or to school bus routes.

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.

### *11.3.3 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. As shown in Figure 3 (Appendix A), the majority (62 percent) of the overall Project work will occur within non-EJ communities, while the remaining 38 percent will occur within EJ Populations. In addition,

the work with the greatest impact associated with the Project is the improvements to existing roads and construction of permanent work pads in the cross-country sections of the ROW. These cross-country sections are found on the main line between the substations at the southern end in Millbury and the Sandy Pond Substation in Ayer. Approximately 42 percent of the proposed Type S roads will occur in EJ Populations while 58 percent will occur in non-EJ communities. Approximately 40 percent of the proposed Type R roads will occur in EJ Populations, while 60 percent will occur in non-EJ Populations. Furthermore, the majority of the EJ Populations are located in Worcester. Nearly all of the work in Worcester will take place along the taps that are located adjacent to existing railroad and roads. These areas do **not** require the heavy construction roadbuilding and work pad creation that will be needed on the main line. Accordingly, the overall burden of the Project impacts in these EJ Populations in Worcester will be significantly lower than the burden on non-EJ populations.

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.

### *11.3.4 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 maintenance and emergency needs safely. In addition, the ACR scope of installing improved foundations and upgraded replacement structures will lead the infrastructure to be better suited to withstand strong winds and storm events, as a result of 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 infrastructure such 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.

### *11.3.5 RMAT Climate Resilience Design Standards Tool*

Using the RMAT Climate Resilience Design Standards Tool (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, and 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 11-5.

**Table 11-5: 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 |

**Table 11-5: 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 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 |
| Location 5 (West Boylston, Worcester) | Not Exposed | High Exposure | High Exposure | High Exposure |
| *See Appendix G to see the locations for each RMAT Report | | | | |

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).

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.

## 11.4 Analysis of Project Impacts to Determine Climate Change Effect

According to 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.

### *11.4.1 Climate Adaptation*

Based on the results from the RMAT Tool in Section 11.3.5 above, the Project's rating based on the climate parameters for sea level rise and storm surge, extreme precipitation including urban or riverine flooding were analyzed in relation to EJ Populations.

There will be no significant tree clearing 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 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. Compensatory flood storage will be provided as required by the WPA should any work pad grading be required in FEMA floodplains. However, NEP aims to utilize temporary work pads in floodplains whenever possible and create the work pad so there is no net fill.

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 ACR work, in particular, provides 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, which will increase public safety. delivery service during times of high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change.

# 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 as a result of this Project. 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 works 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 access roads are already within 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 roads within the existing ROW and the few off-ROW access routes 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 the work pad construction. For the EENF impact calculations, NEP has conservatively assumed that all work pads in RA will require grading and be permanent. However, 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 them temporary wherever possible. In

addition, work pad sizes will either be reduced by 50% following construction or areas of 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. For the EENF impact calculations, NEP has conservatively assumed that all work pads in BLSF will require grading and be permanent. However, NEP will aim to first excavate out and install fill so there is no net change in flood storage. As the Project design advances and moves into WPA permitting with Conservation Commissions, NEP will work to reduce work pad impacts within BLSF by minimizing their size or making them temporary wherever possible. If required, compensatory flood storage will be provided.

The road refresh within BLSF will have negligible impact on flood storage loss since it is limited refreshing stone over an existing road. NEP will provide compensatory flood storage should a permanent work pad in BLSF require grading that would lead to a significant loss of flood storage. Lost flood storage volume would be replaced in locations not previously used for flood storage and will be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation. Compensatory flood storage areas will be located within the same reach as the lost storage volume and will have an unrestricted hydraulic connection to the waterway, to the extent possible.

## 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 intends to file a MESA Checklist by Q1 2024 and will continue to consult with NHESP on appropriate BMPs and mitigation measure, however at a minimum NEP will follow the NHESP O&M guideline, 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.

## 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 and redevelopment project.

The Project will not create new stormwater discharges into any resource areas. The proposed Project involves the improvement of existing gravel access roads which are considered pervious. These pervious, gravel roads will be refreshed and stabilized to help address rill erosion issues in certain roadway segments, which have not been maintained. The redevelopment and refreshment of these roads is expected to lead to an overall improvement in the quality of stormwater runoff.

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 MA 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 D) 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. 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.

## 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. All "structures" in these rivers and great ponds are subject to waterways licensing under 310 CMR 9.05(i). A "structure" is defined as "any man-made object which is intended to remain in place over waterways." Accordingly, a Chapter 91 license is required for electric transmission line crossings over jurisdictional waterbodies even where there is no physical structure in the stream or river.

NEP conducted an initial file review to identify potential existing Chapter 91 licenses for the O141/P142 and Line 313/343 circuits. A summary of applicable licenses is provided in Table 12-1 below.

NEP is still investigating the needs for Chapter 91 licensing and/or permitting with MassDEP. However, based on our current understanding of the scope of work, which does not include any lowering of existing transmission lines or change in transmission line alignment over a jurisdictional waterbody, we assume that Chapter 91 will not be required. At most, minor modifications to existing licenses may be required.

**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 |

# 13.0 Mitigation and Section 61 Findings

This section provides a draft template for Section 61 Findings pursuant to the Secretary's 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.”

This section contains draft Section 61 Findings for those issues involving the following state agencies, actions and/or statutory requirements:

- MassDEP – Section 401 Individual WQC
- NHESP – MESA Checklist;
- DCR – Construction Access Permit
- MEPA Interim Protocol on EJ.
- MassDOT

The access plans provided in Appendix A, Figure 2 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 is currently working with construction to determine ways to reduce impacts specifically to environmentally sensitive areas. The tables in the Draft Findings below outline the potential impacts from the Project and associated mitigation proposed.

## 13.1 MassDEP

**EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS**

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**DRAFT 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:

- Replacement of 296 structures on the 313/343 and O141/P142 Lines 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 Expanded ENF to MEPA. The Expanded ENF is the first MEPA filing associated with this Project. 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 13-1 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 13-1: 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.<br><br>Temporary impacts only.<br><br>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, as appropriate. Compensatory flood storage will be provided for any permanent flood storage loss from construction of work pads. However, NEP will aim to have no net fill for work pad construction. Road refresh will lead to negligible loss of flood storage as stone will be added to existing grade. |

**Table 13-1: Water Quality Related Mitigation**

| Category | Impact | Mitigation Measures |
|---|---|---|
| | | Employ temporary erosion controls (e.g., silt fence, hay/straw bales, filter socks, mulching, temporary and/or permanent reseeding) and sedimentation controls, as appropriate. |
| RA | Permanent impact to Riverfront Area for access and work envelopes. | Restore areas temporarily impacted. Permanent work pads will be reduced by 50% after construction is completed or be loamed and seeded.<br><br>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.<br><br>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**

**DRAFT 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 Conservation and Management Permit ("CMP") 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:

- Replacement of 296 structures on the 313/343 and O141/P142 Lines 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 Expanded ENF to MEPA. The Expanded ENF is the first MEPA filing associated with this Project. 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;
- Species specific protection plans;
- Time of year restrictions;
- Protective fencing and exclosures;

- 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**

**DRAFT 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:

- Replacement of 296 structures on the 313/343 and O141/P142 Lines 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 Expanded ENF to MEPA. The Expanded ENF is the first MEPA filing associated with this Project. 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 13-2 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 13-2: 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. |
| 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.<br><br>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 13-2: 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.<br><br>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**

**DRAFT 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:

- Replacement of 296 structures on the 313/343 and O141/P142 Lines 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 Expanded ENF to MEPA. The Expanded ENF is the first MEPA filing associated with this Project. 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 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 13-3: 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 off town roadways.<br><br>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 13-3: 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.<br><br>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.<br><br>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.).<br><br>Where construction will occur adjacent to residences, NEP will notify landowners prior to the commencement of work.<br><br>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.<br><br>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 Mass DOT

**EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS**

**MASSACHUSETTS DEPARTMENT OF TRANSPORTATION**

**DRAFT 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:

- Replacement of 296 structures on the 313/343 and O141/P142 Lines 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 Expanded ENF to MEPA. The Expanded ENF is the first MEPA filing associated with this Project. 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 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 13-4: 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.<br><br>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.<br><br>Arrangements will be made with local officials to have traffic safety personnel on-hand during periods of construction.<br><br>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**

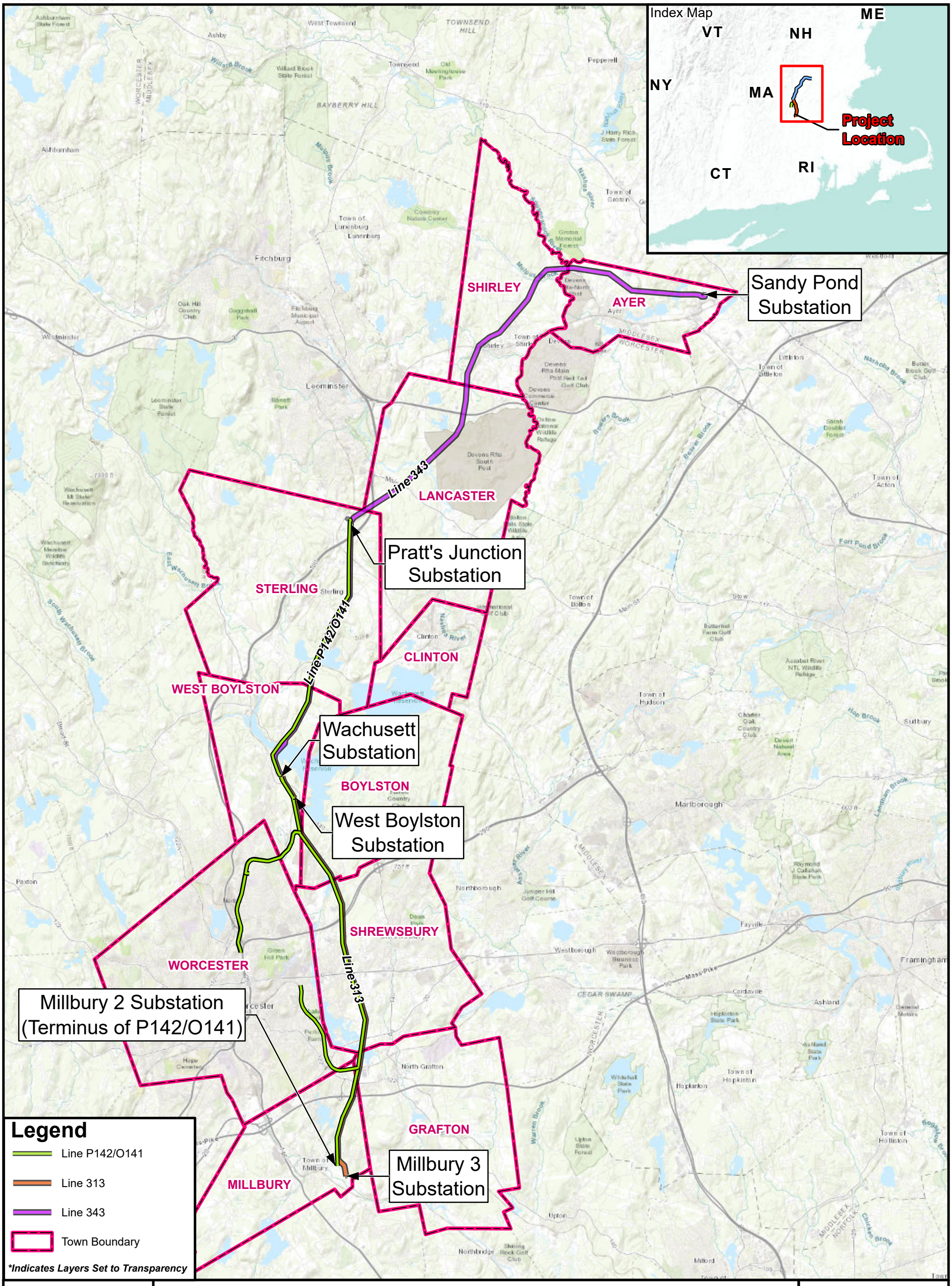
# Appendix A: Figures

## Figure 1: Site Location Map

## Figure 2: Access Plans

## Figure 3: Environmental Justice Areas

## Figure 4: Other Pollution Sources




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

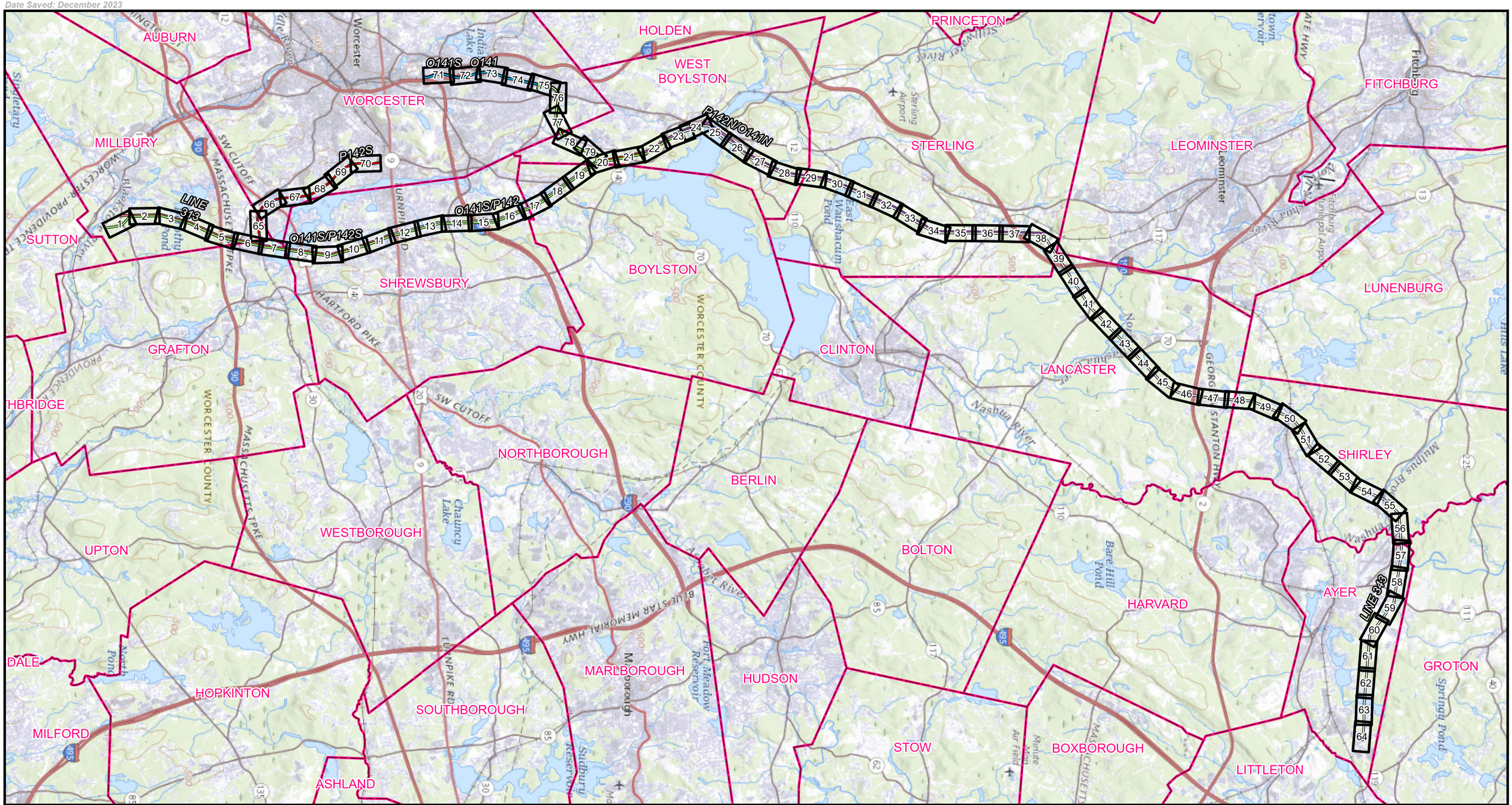
## USGS OVERVIEW

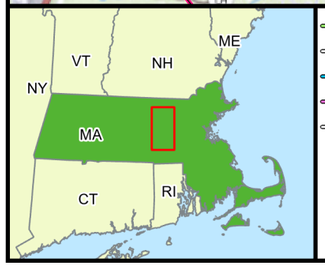
Figure 1

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

## PAGE KEY SHEET

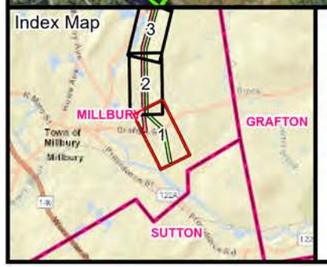
## WORCESTER AND MIDDLESEX COUNTIES, MA

FIGURE 2

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

Base Map: USGS National Map

nationalgrid TRC


- 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)
- TYPE S ROAD
- LINE 313
- O141S/P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- APPROXIMATED WETLAND BOUNDARY LINE
- APPROXIMATED WETLAND
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- 200' PERENNIAL RIVERFRONT AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

# LINE 313/343 & O141/P142

**FIGURE 2**
**ACCESS PLANS**

**MILLBURY, MA**



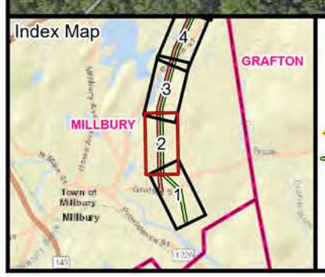
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

CHERYL LANE
CAROUSEL DRIVE
W-KCF-1
MILLBURY
NEW ENGLAND POWER CO GRAFTON ST
GOBRON CHRISTOPHER 2 RAYBURN DR
W-DJH-2
W-MBF-2
W-MBF-4
W-MBF-5
W-MBF-6
S-SFP-1
182
181
180
179
178
O141S/P142S
7
8
9
10
11
12
LINE 313
QUALITY HOME BUILDERS, INC 12 RAYBURN DR
QUALITY HOME BUILDERS,INC RAYBURN DR
W-MJR-28
W-MJR-26
W-MJR-24
W-MJR-25
W-MJR-27
W-MJR-29
HENDRICKSON RUSSELL W 14 RAYBURN DR
STEPHANY JULIE 2 COLTON RD
TOWN OF MILLBURY COLTON RD
TPR HOMES LLC 83 GRAFTON ST
RAYBURN DRIVE
HORSESHOE LANE

Index Map




- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- TYPE S ROAD
- LINE 313
- O141S/P142S
- TIMBER MATTING
- WORKPAD
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

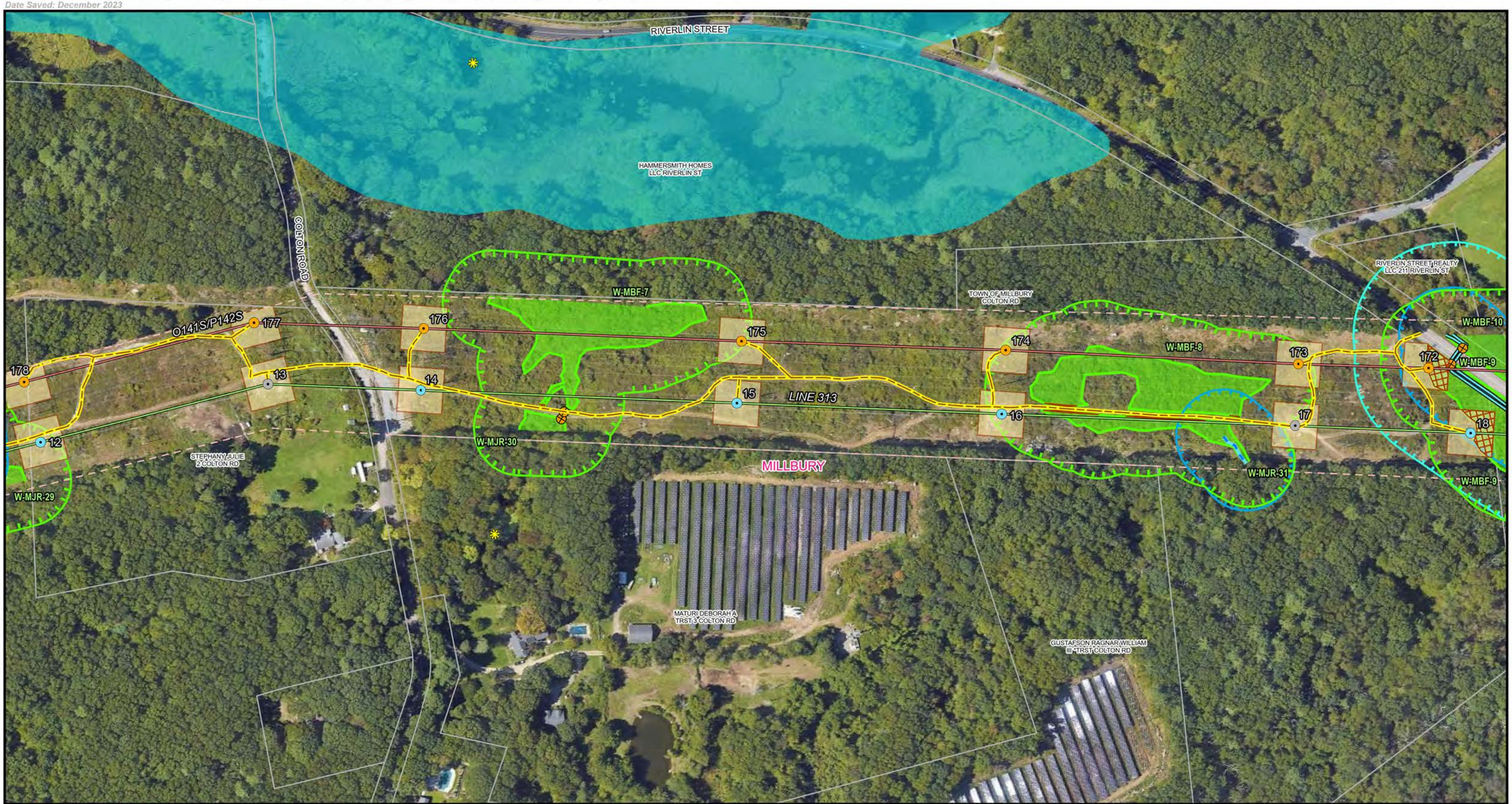
**MILLBURY, MA**

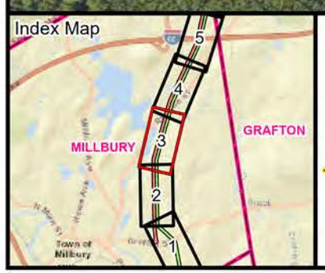


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC




- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
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- 100' STREAM AND SURFACE WATER BUFFER
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- DELINEATED STREAM CENTERLINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**MILLBURY, MA**

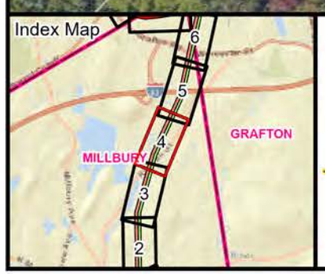


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC


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)
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142S
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED NON-JD DRAINAGE LINE
- DELINEATED STREAM EDGE OF BANK
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- APPROXIMATE EDGE OF ROW
- PARCEL 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



- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE & OTHER MAINTENANCE (PHASE 2)
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- REPLACE INSULATORS (LINE O141/P142)
- TYPE S ROAD
- LINE 313
- O141S/P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD
- 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

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

HASTINGS AVENUE
GRAFTON ROAD
TOWN OF MILLBURY GRAFTON-WORC RD
PAPALILO PAUL 1 HASTINGS AVE
ROBERT FIELDS 1548 GRAFTON-WORC RD
WYMAN-GORDON COMPANY INC 1537 R GRAFTON-WORC RD
130 WESTBOROUGH ST 130 WESTBOROUGH ST
HALLEN RICHARD W & DAVID B TRUSTEES 121 CREEPER
WYMAN GORDON CO 244 REAR WORCESTER STREET #REAR
NEW ENGLAND POWER CO INC 115 CREEPER HILL ROAD
SOME TREE CLEARING MAY BE REQUIRED
NEW ENGLAND POWER CO GRAFTON-WORC RD
NEW ENGLAND POWER COMPANY 230 WORCESTER STREET
2000 GRAFTON ROAD LLC 2000 GRAFTON-WORC RD
JUDKINS JO-ANN J OFF GRAFTON-WORC RD
HILLTOP STREET
WORCESTER STREET
WYMAN GORDON CO 244 WORCESTER STREET

163 162 161 160 159B 159A (142S) 158 1 2 3 4
28 29 30 31 32 33
W-MBF-12 S-DJH-6 W-DJH-6 S-DJH-7 W-MBF-13

1. HAZWOPER TRAINING REQUIRED PRIOR TO ACCESSING SITE.

2. AT THE START OF THE PROJECT, CONTACT 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.

Index Map
WORCESTER
GRAFTON
MILLBURY

- 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)
- TYPE R ROAD
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142S
- P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- MADEP WETLAND (2005)*
- APPROXIMATED PERENNIAL STREAM CENTERLINE
- DELINEATED STREAM EDGE OF BANK
- DELINEATED STREAM CENTERLINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N
1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

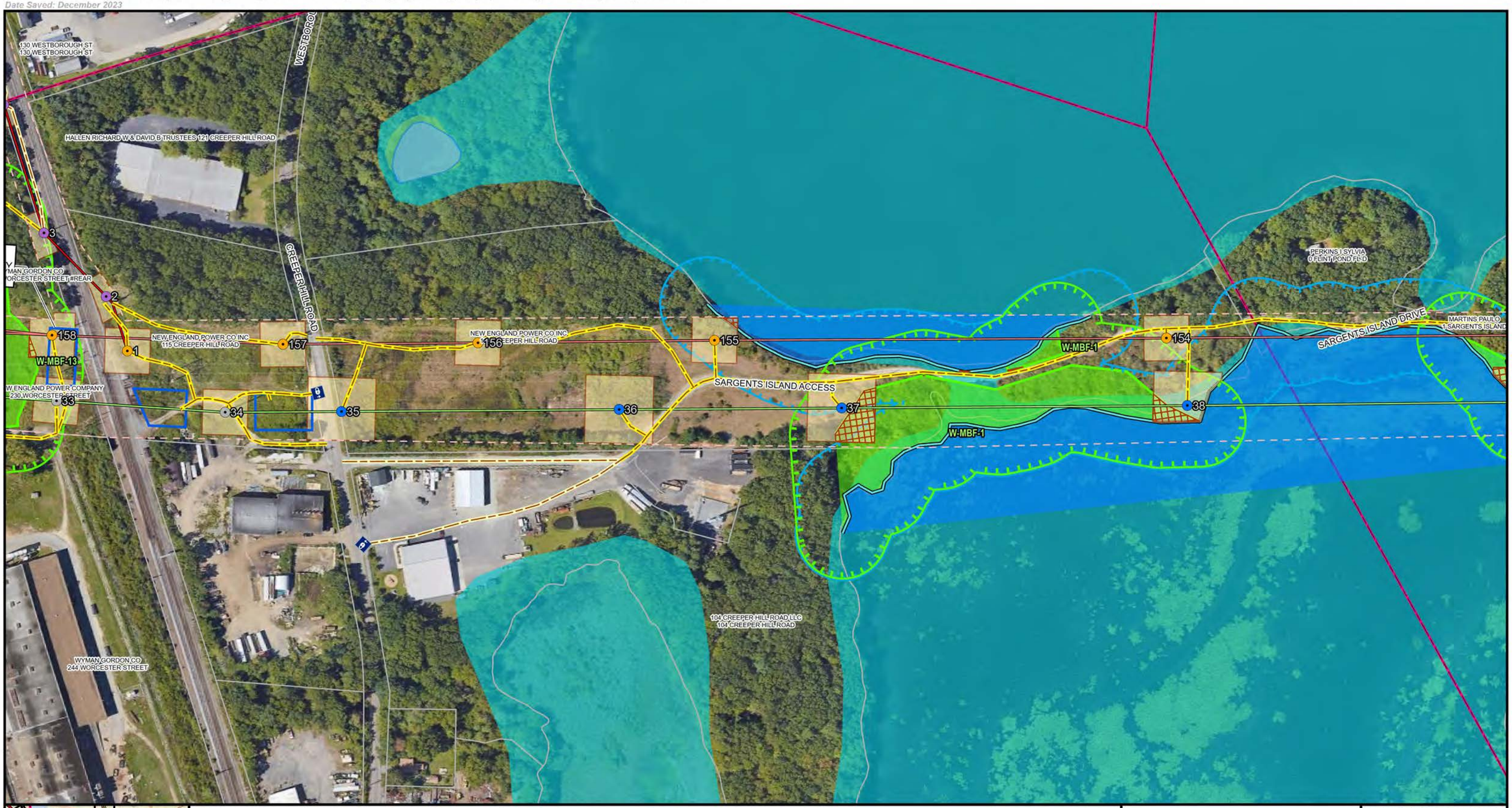
**GRAFTON & MILLBURY, MA**

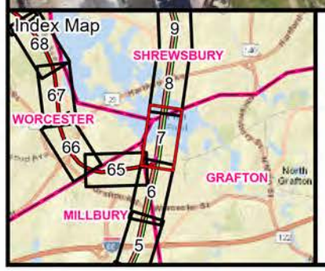


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC




- 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)
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142S
- P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- DELINEATED STREAM EDGE OF BANK
- 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

N

1 inch = 200 Feet
0 100 200
Feet

# LINE 313/343 & O141/P142

## FIGURE 2
## ACCESS PLANS

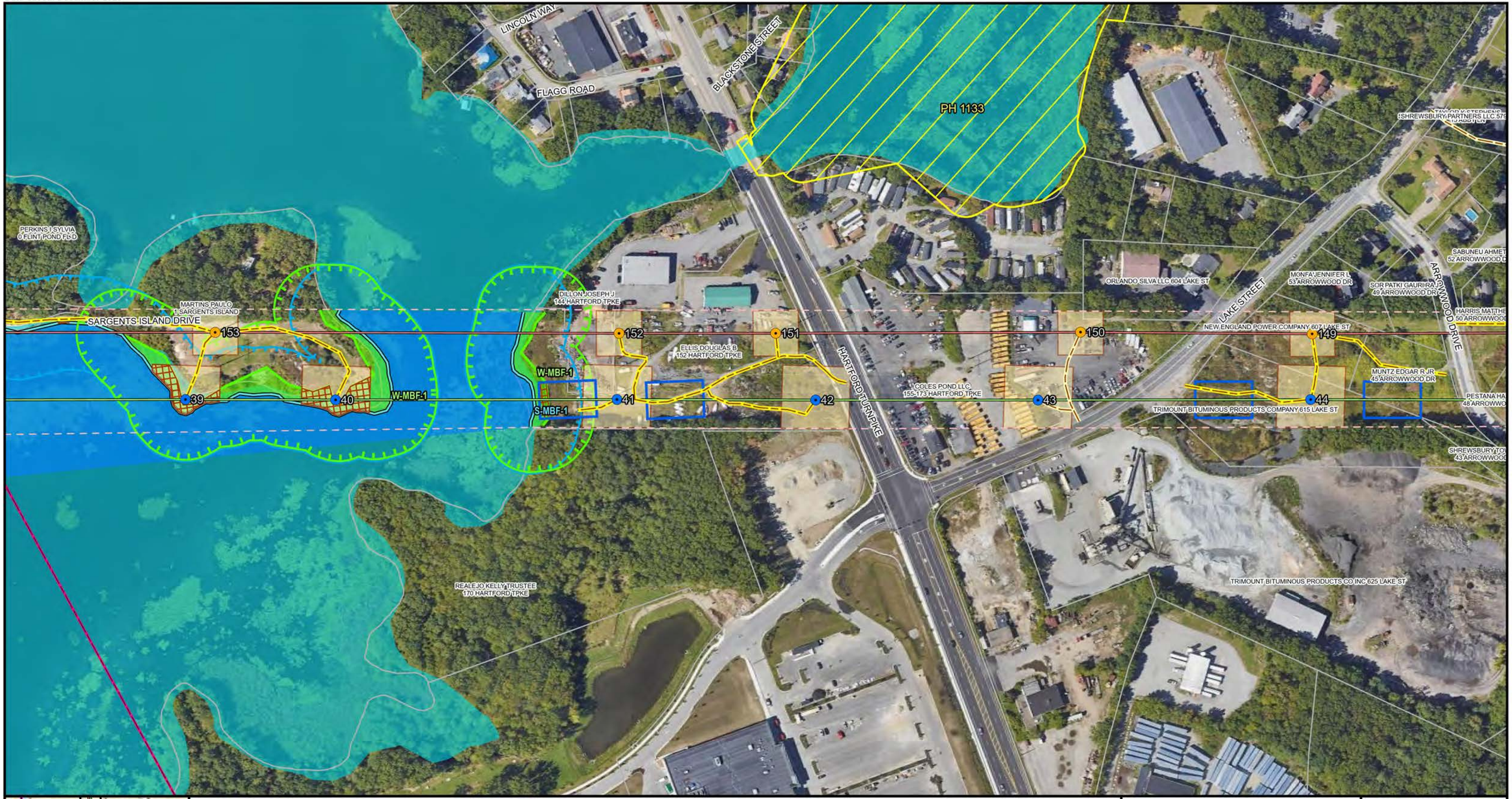
**MILLBURY, GRAFTON, WORCESTER, & SHREWSBURY, MA**

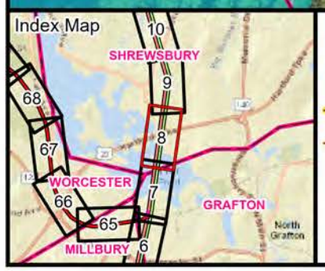


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC




REPLACE INSULATORS (LINE O141/ P142)
REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
TYPE S ROAD
PREFERRED ACCESS-NO IMPROVEMENTS
LINE 313
O141S/P142S
PULL PAD
TIMBER MATTING
WORKPAD
100' BUFFER ZONE
100' STREAM AND SURFACE WATER BUFFER
DELINEATED STREAM EDGE OF BANK
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

N

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

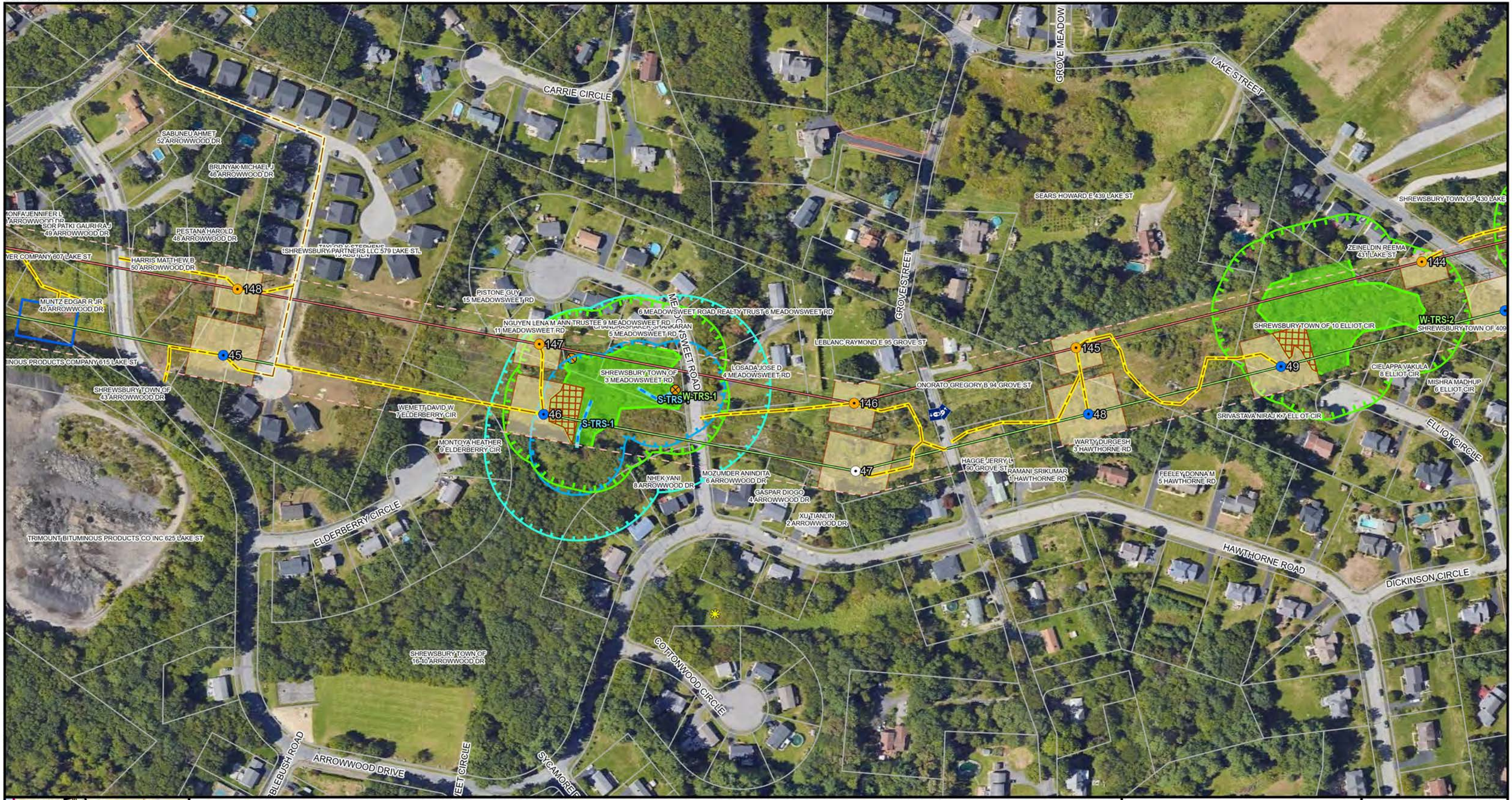
**SHREWSBURY, MA**

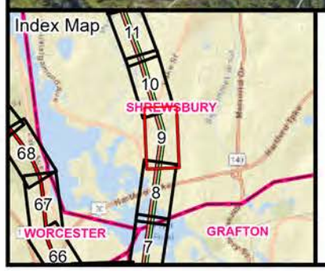


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC




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

N

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

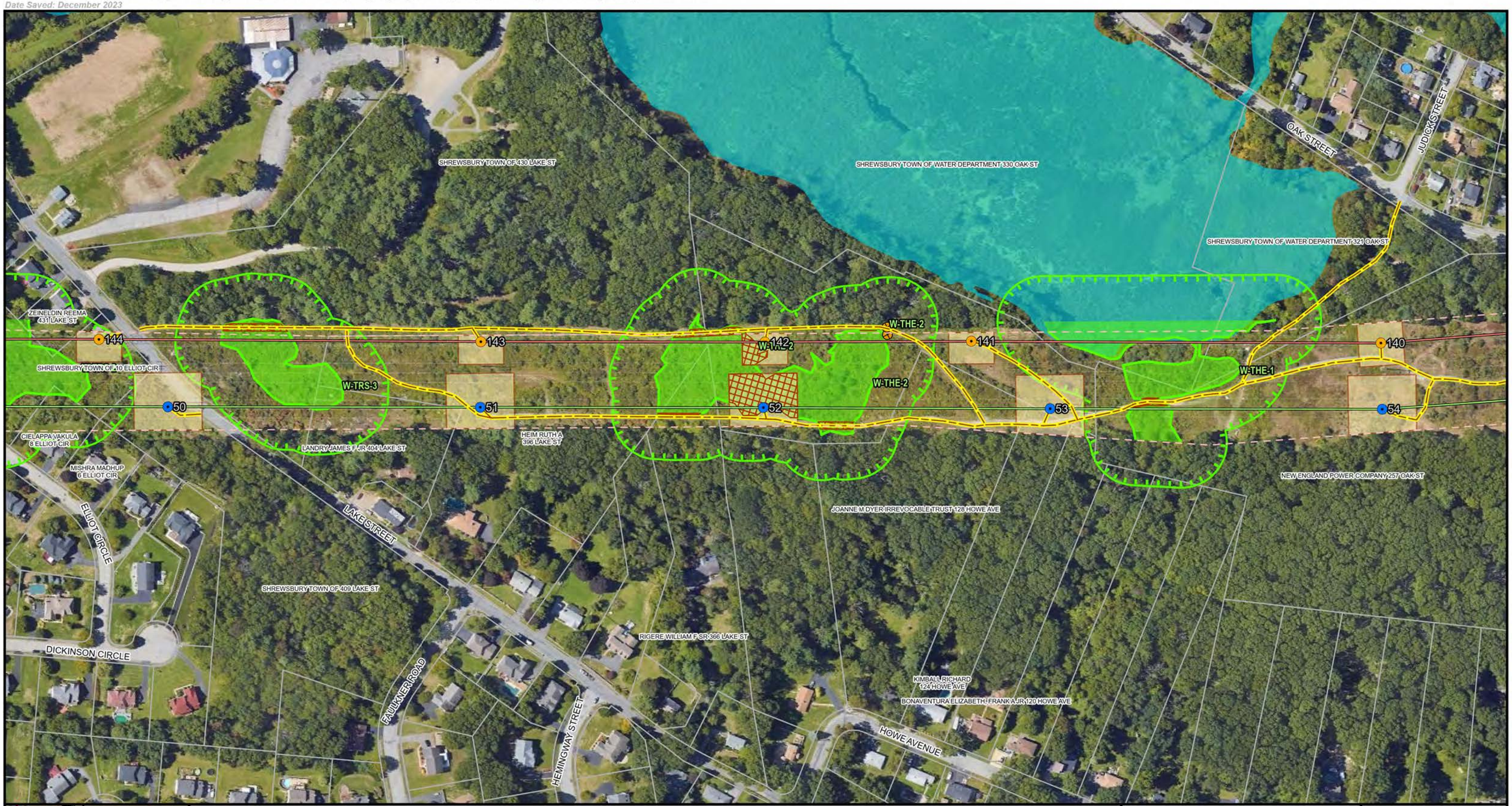
**SHREWSBURY, MA**



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

Base Map: Google Imagery

nationalgrid
TRC





- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- LINE 313
- O141S/P142S
- TIMBER MATTING
- WORKPAD
- CULVERT
- 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

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**SHREWSBURY, MA**

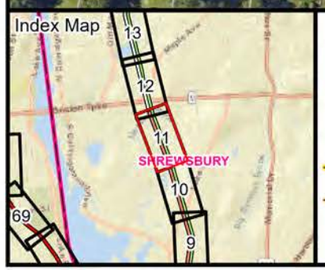


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC


Index Map




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



- 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)
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S/P142
- O141S/P142S
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- APPROXIMATED PERENNIAL STREAM CENTERLINE
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

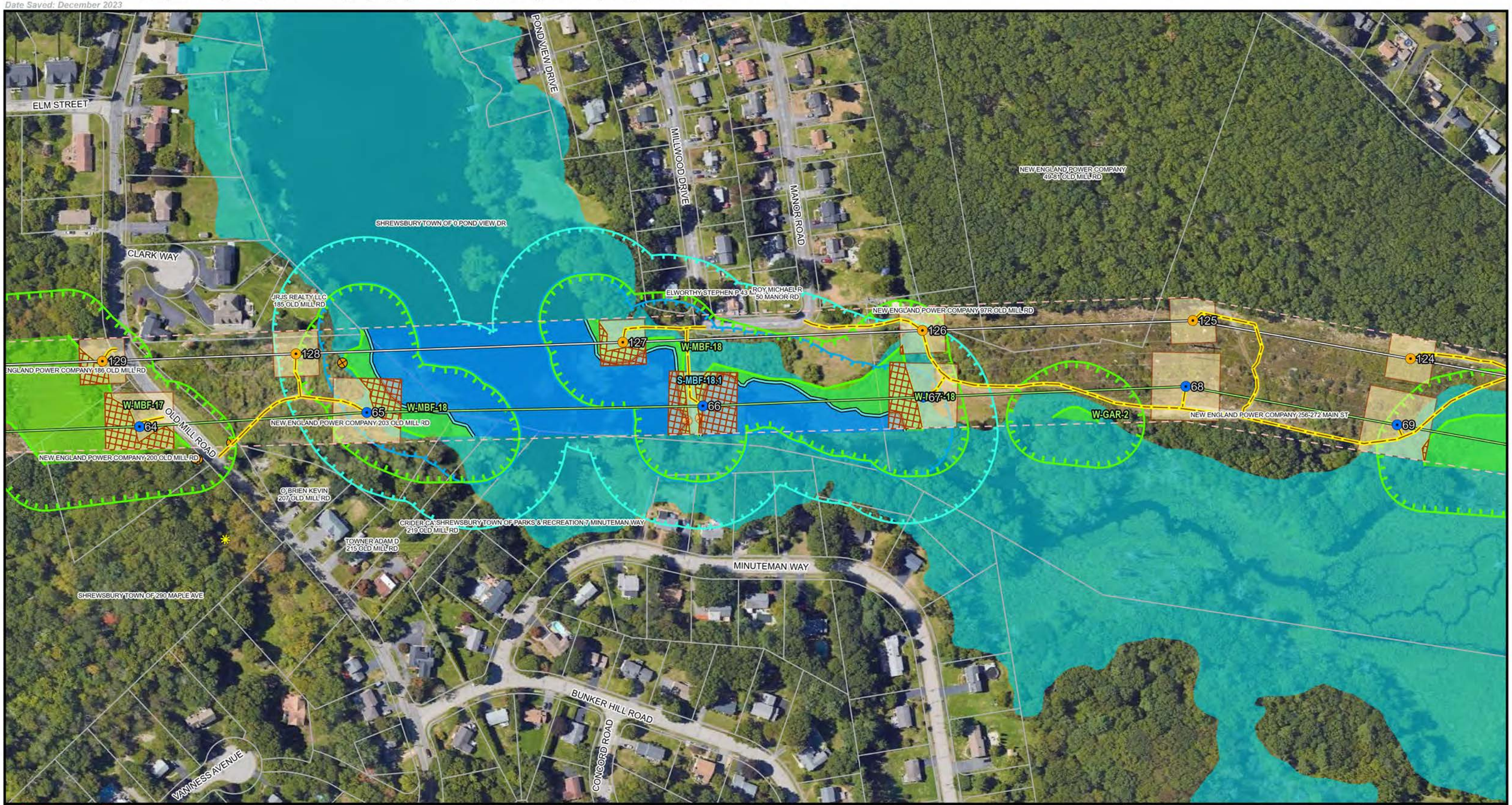
**SHREWSBURY, MA**



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

Base Map: Google Imagery

nationalgrid
TRC





- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- LINE 313
- O141S/P142
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM EDGE OF BANK
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL 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

OLD MILL ROAD
IRETA ROAD
INTERSTATE 290
SHREWSBURY,TOWN OF,30-36 IRETA RD
NEW ENGLAND POWER COMPANY,249R MAIN ST
WU JOAE
257 MAIN ST
WHITNEY ST HOME BUILDERS LLC 259 MAIN ST
WHITNEY ST HOME BUILDERS LLC 261 MAIN ST
NEW ENGLAND POWER COMPANY,256-272 MAIN ST
W-GAR-2
W-MBF-19
124
123
122
121
120
119
69
70
71
72
73
74
SHREWSBURY TOWN OF 277 MAIN ST
HOLDASH JAY C
280 MAIN ST
MAIN STREET
DALTON DRIVE
STRATTON DRIVE
CELLTWELPCKIL FISHER JOHN C 3 ESSEX DR DR
OXFORD DRIVE
ASHLEY DRIVE
BOXFORD DRIVE
ST JOHNS HIGH SCHOOL OF WORCESTER COUNTY 315-347 MAIN ST
LENOX DRIVE
ESSEX DRIVE
CABOT DRIVE

Index Map

REPLACE INSULATORS (LINE O141/ P142)
REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
TYPE S ROAD
LINE 313
O141S/P142
PULL PAD
TIMBER MATTING
WORKPAD
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

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


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
- NHESP POTENTIAL VERNAL POOL
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**SHREWSBURY, MA**

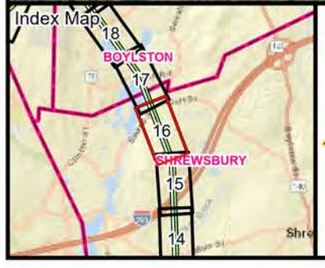


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC


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
- TIMBER MATTING
- WORKPAD
- 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
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

## LINE 313/343 & O141/P142

**FIGURE 2**
**ACCESS PLANS**

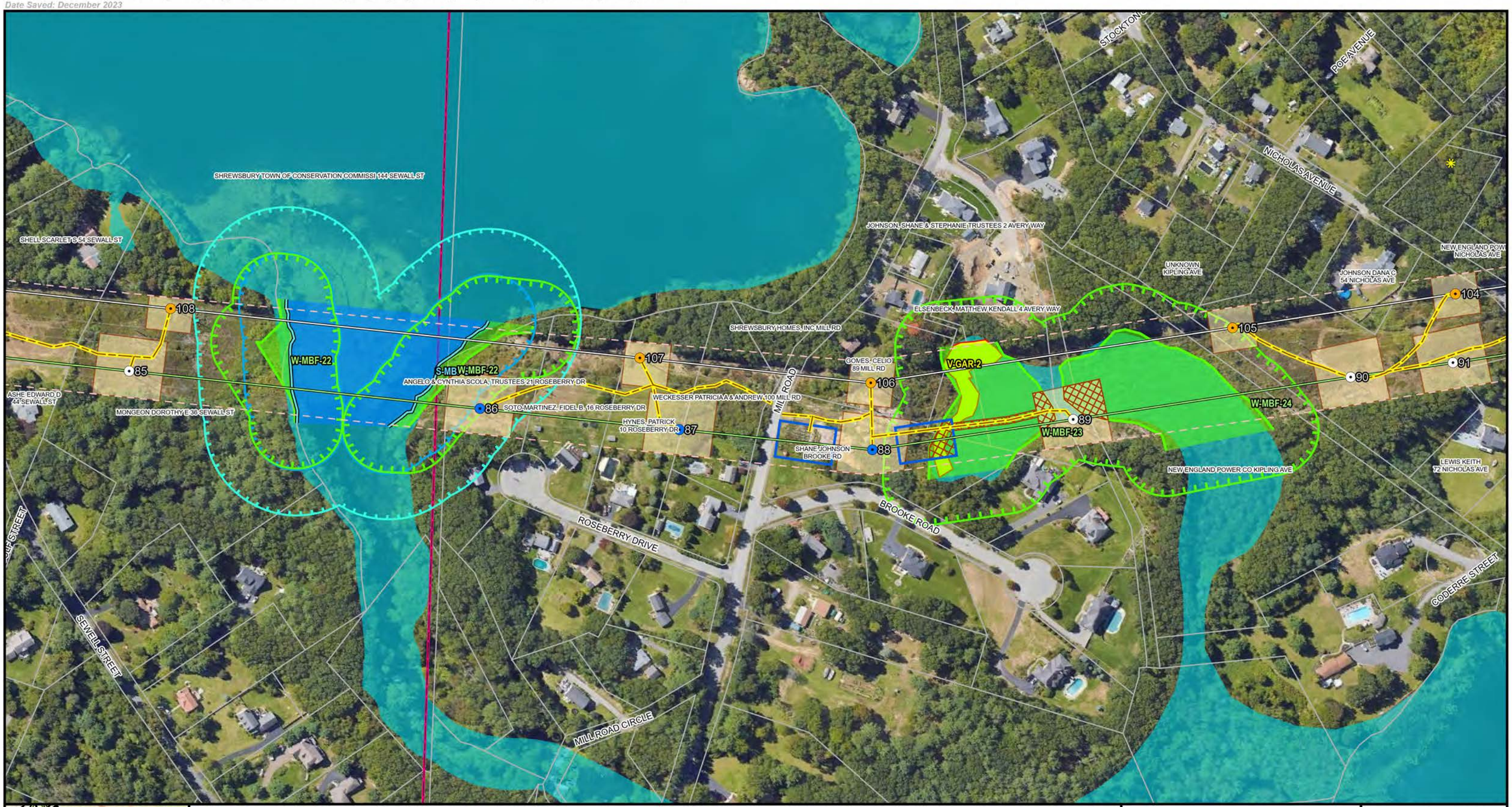
**SHREWSBURY, MA**



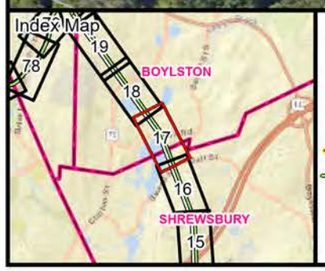
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC




Index Map




- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- LINE 313
- O141S/P142
- PULL PAD
- TIMBER MATTING
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM EDGE OF BANK
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- 200' PERENNIAL RIVERFRONT AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

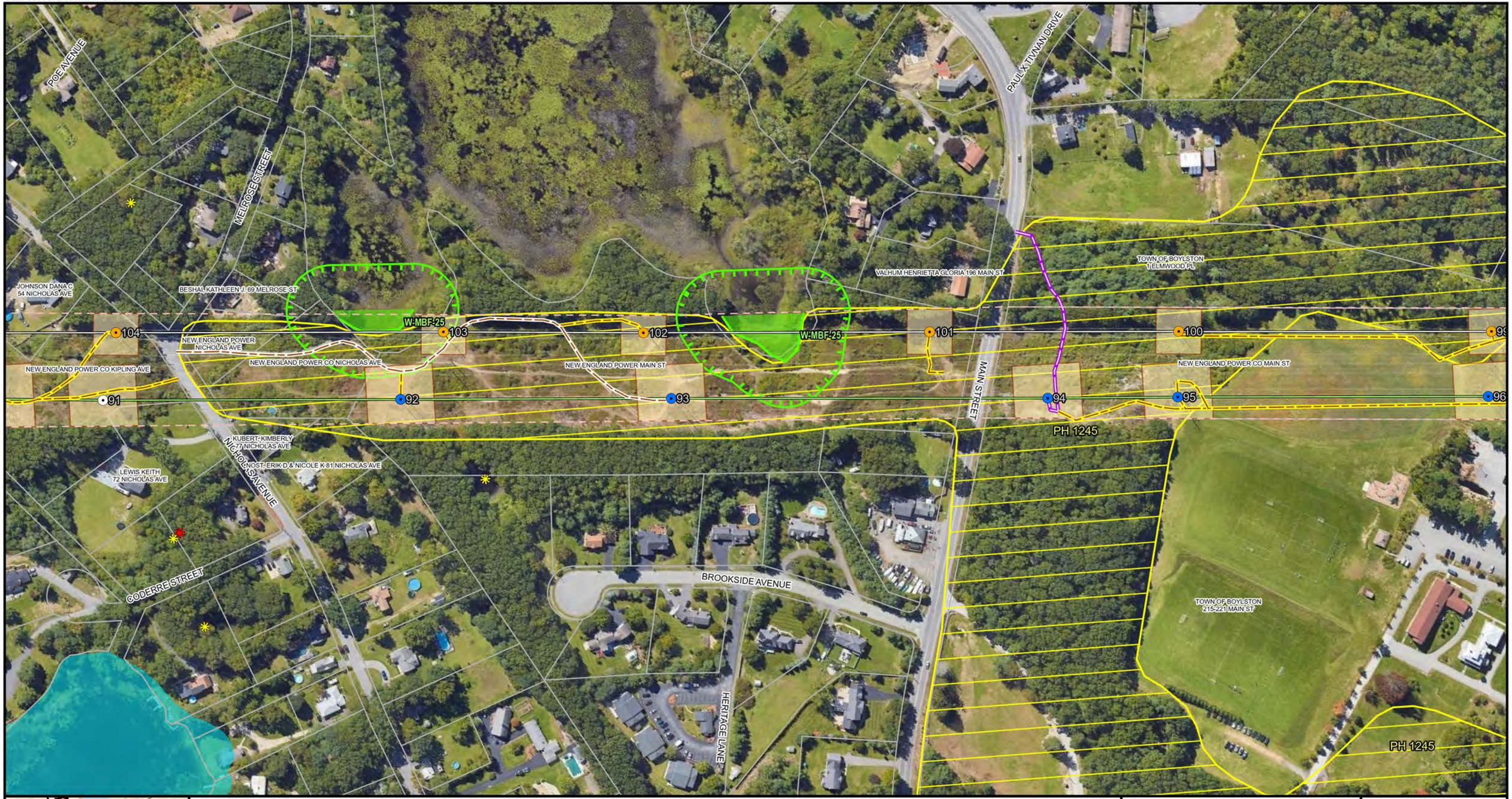
**BOYLSTON & SHREWSBURY, MA**

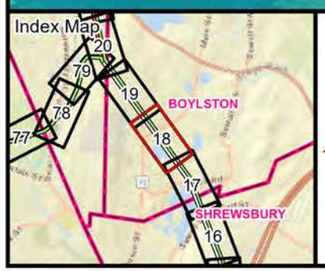


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC




- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- ALTERNATE
- LINE 313
- O141S/P142
- WORKPAD
- 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

N

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

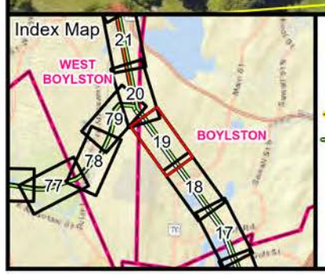
**BOYLSTON, MA**



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

Base Map: Google Imagery

nationalgrid
TRC


- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- LINE 313
- O141S/P142
- TIMBER MATTING
- WORKPAD
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- OUTSTANDING RESOURCE WATERS*
- NHESP PRIORITY HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL 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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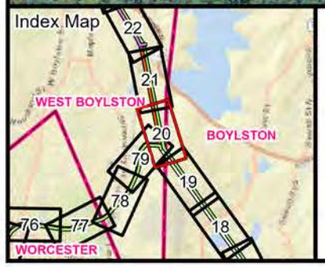



- REPLACE INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- LINE 313
- O141S
- O141S/P142
- O141W
- O142/O141W
- PULL PAD
- TIMBER MATTING
- WORKPAD
- 100' BUFFER ZONE
- 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

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**

**BOYLSTON & WEST BOYLSTON, MA**



nationalgrid
TRC

HARTWELL STREET
DEPARTMENT OF CONSERVATION & RECREATION HARTWELL STREET
NEW ENGLAND POWER CO HARTWELL STREET
WEST BOYLSTON
BOSTON & MAINE RAILROAD TEMPLE STREET
NEW ENGLAND POWER CO 200 PIERCE STREET
DEPARTMENT OF CONSERVATION & RECREATION HARTWELL STREET REAR
PH 1373
DEPARTMENT OF CONSERVATION & RECREATION TEMPLE STREET
WEST BOYLSTON TOWN OF 196 TEMPLE STREET
EH 981
DEPARTMENT OF CONSERVATION & RECREATION 131 TEMPLE STREET
TEMPLE STREET
BOYLSTON
DCR
OFF WEST BOYLSTON ST

89 88 87 86 85 106 107 108 109 110 111

O142/O141W

LINE 313

W-DMC-1 W-DMC-2 S-DMC-1 S-DMC-2 S-GAR-1

Index Map
West Boylston
23 22 21 20 19
WEST BOYLSTON
BOYLSTON

- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE STRUCTURE (LINE O141/ P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- LINE 313
- O142/O141W
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- 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

N

1 inch = 200 Feet
0 100 200
Feet

# LINE 313/343 & O141/P142

**FIGURE 2**
**ACCESS PLANS**

**WEST BOYLSTON, MA**



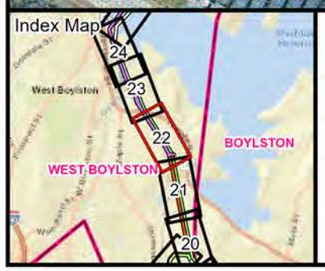
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

PIERCE STREET
NEW ENGLAND POWER CO 200 PIERCE STREET
O142/O141W
O142/O141W
84
84E
83
82
81
80
79
W-DMC-3
84C
112
113
114
115
116
117
BOSTON & MAINE RAILROAD TEMPLE STREET
W-KCF-29
S-KCF-9
W-KCF-28
P142N/O141N
W-KCF-27
S-KCF-10
LINE 313
S-KCF-9
NEW ENGLAND POWER CO TEMPLE STREET
KILCOYNE SEAN T 82 TEMPLE STREET
RYDER MICHAEL F 74 TEMPLE STREET
ENHUS E & LAVALLEE L & JACOBSEN C TRUSTE 70 TEMPLE STREET
VOKES NORMAN A 63 TEMPLE STREET
NEW ENGLAND POWER CO PIERCE STREET
WEST BOYLSTON
ROBICHAUD PAUL R & LAUREN N 80 TEMPLE STREET
WEST BOYLSTON SUBSTATION
PH-1280
DEPARTMENT OF CONSERVATION & RECREATION PIERCE STREET
DEPARTMENT OF CONSERVATION & RECREATION TEMPLE STREET
WEST BOYLSTON TOWN OF 196 TEMPLE STREET
OAK AVENUE
ARMORE AVENUE
TEMPLE STREET
N & RECREATION 131 TEMPLE STREET

Index Map




- 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)
- TYPE S ROAD
- LINE 313
- O142/O141W
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 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

N

1 inch = 200 Feet
0 100 200
Feet

## LINE 313/343 & O141/P142

**FIGURE 2**
**ACCESS PLANS**

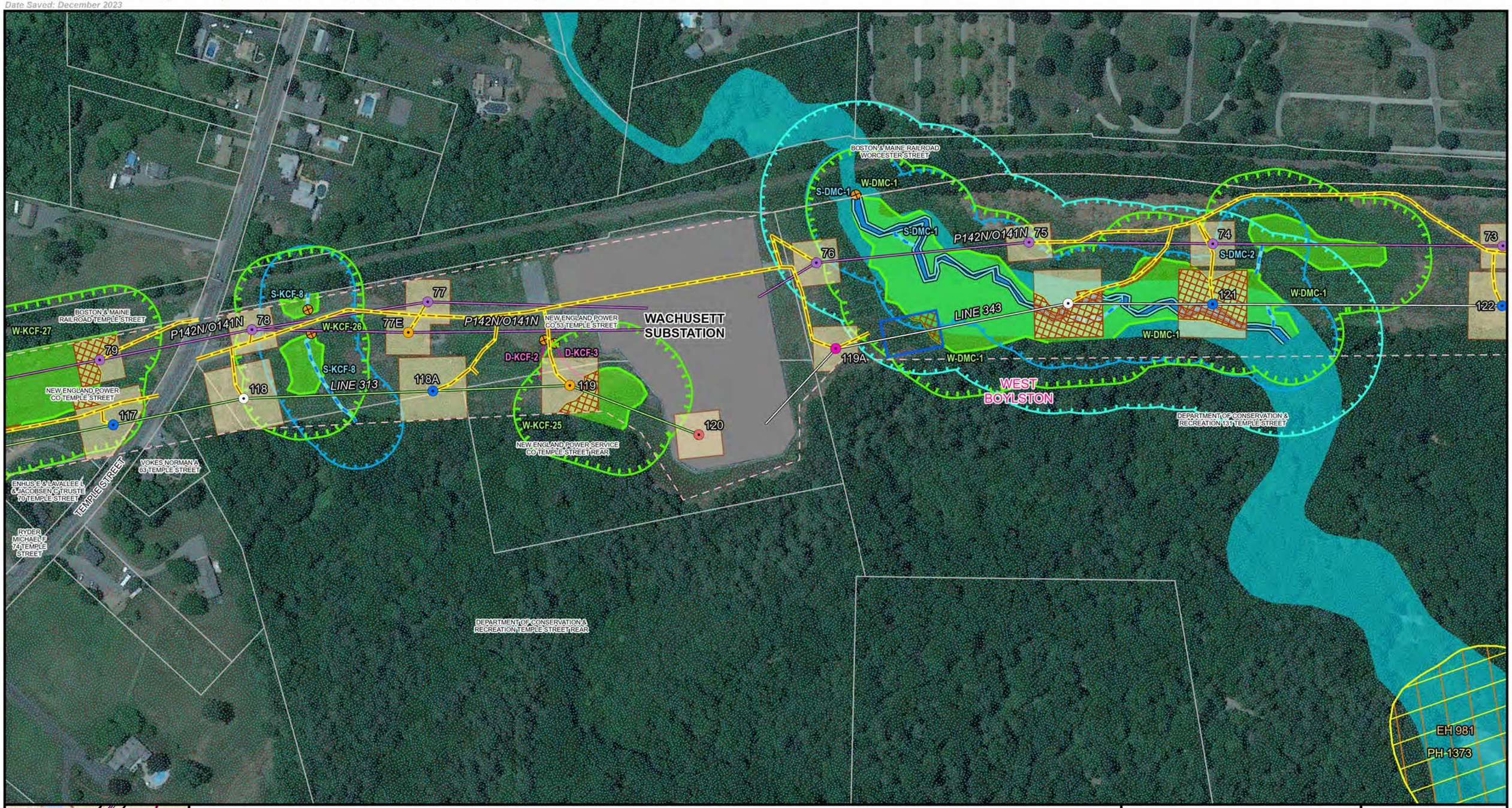
**WEST BOYLSTON, MA**



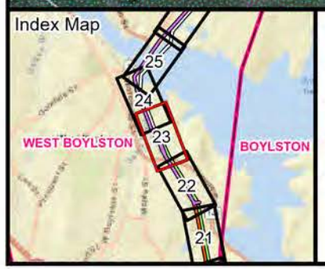
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC




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)
- TYPE S ROAD
- LINE 313
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED NON-JD DRAINAGE LINE
- DELINEATED STREAM EDGE OF BANK
- DELINEATED STREAM CENTERLINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- 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)
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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WEST BOYLSTON, MA**



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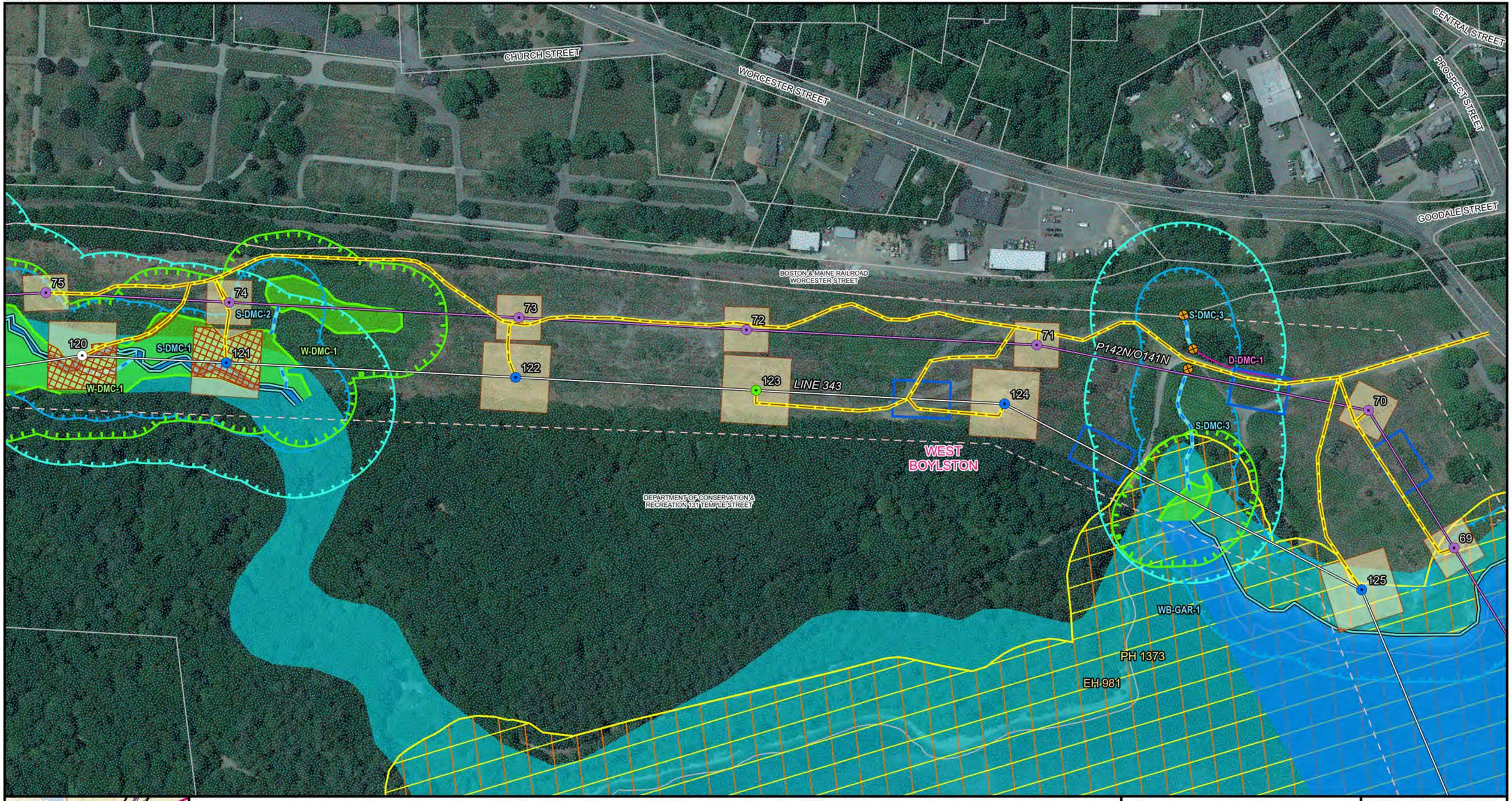
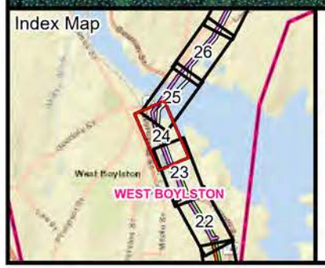



Index Map




- 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)
- TYPE S ROAD
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WEST BOYLSTON, MA**



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

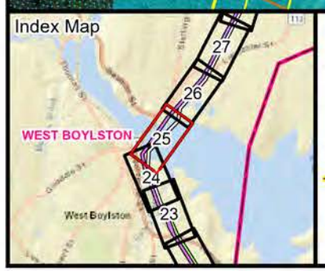
Base Map: Google Imagery

nationalgrid

TRC

GOODALE STREET
WORCESTER STREET
BEAMAN STREET
HOLT STREET
STERLING STREET
LANCASTER STREET
BOSTON & MAINE RAILROAD WORCESTER STREET
DEPARTMENT OF CONSERVATION & RECREATION 131 TEMPLE STREET
TREE CLEARING MAY BE REQUIRED
WB-GAR-1
W-DMC-2
D-DMC-1
S-DMC-3
S-DMC-3
LINE 343
P142N/O141N
70
69
68
67
125
126
WEST BOYLSTON
EH 981
PH 1373

Index Map




- ACCESS GATE
- OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- LINE 343
- P142N/O141N
- PULL PAD
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- WORKPAD
- CULVERT
- 100' BUFFER ZONE
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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WEST BOYLSTON, MA**

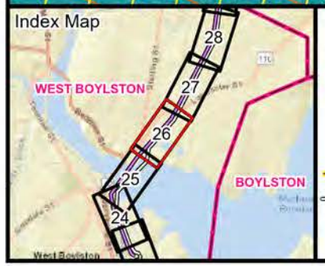


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC


Index Map




- ACCESS GATE
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
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**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

DEPARTMENT OF CONSERVATION & RECREATION LANCASTER COMMONS
DEPARTMENT OF CONSERVATION & RECREATION FAIRBANKS STREET
HERITAGE LANE
FALLAVOLLITA GUY 147 LANCASTER STREET
TER R LANCASTER STREET
ROTTI CHRISTOPHER R 10 LANCASTER STREET
ITALIANO WILLIAM S JR FAIRBANKS STREET
W-GAR-2
V-GAR-3
S-GAR-1
62
61
60
59
58
57
P142N/O141N
131
DEPARTMENT OF CONSERVATION & RECREATION LANCASTER STREET
132
133
LINE 343
S-GAR-1
134
135
136
FALLAVOLLITA ALEXANDER JR & GUY LANCASTER STREET
S-GAR-1
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 REALTY 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)
- TYPE S ROAD
- LINE 343
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- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WEST BOYLSTON, MA**



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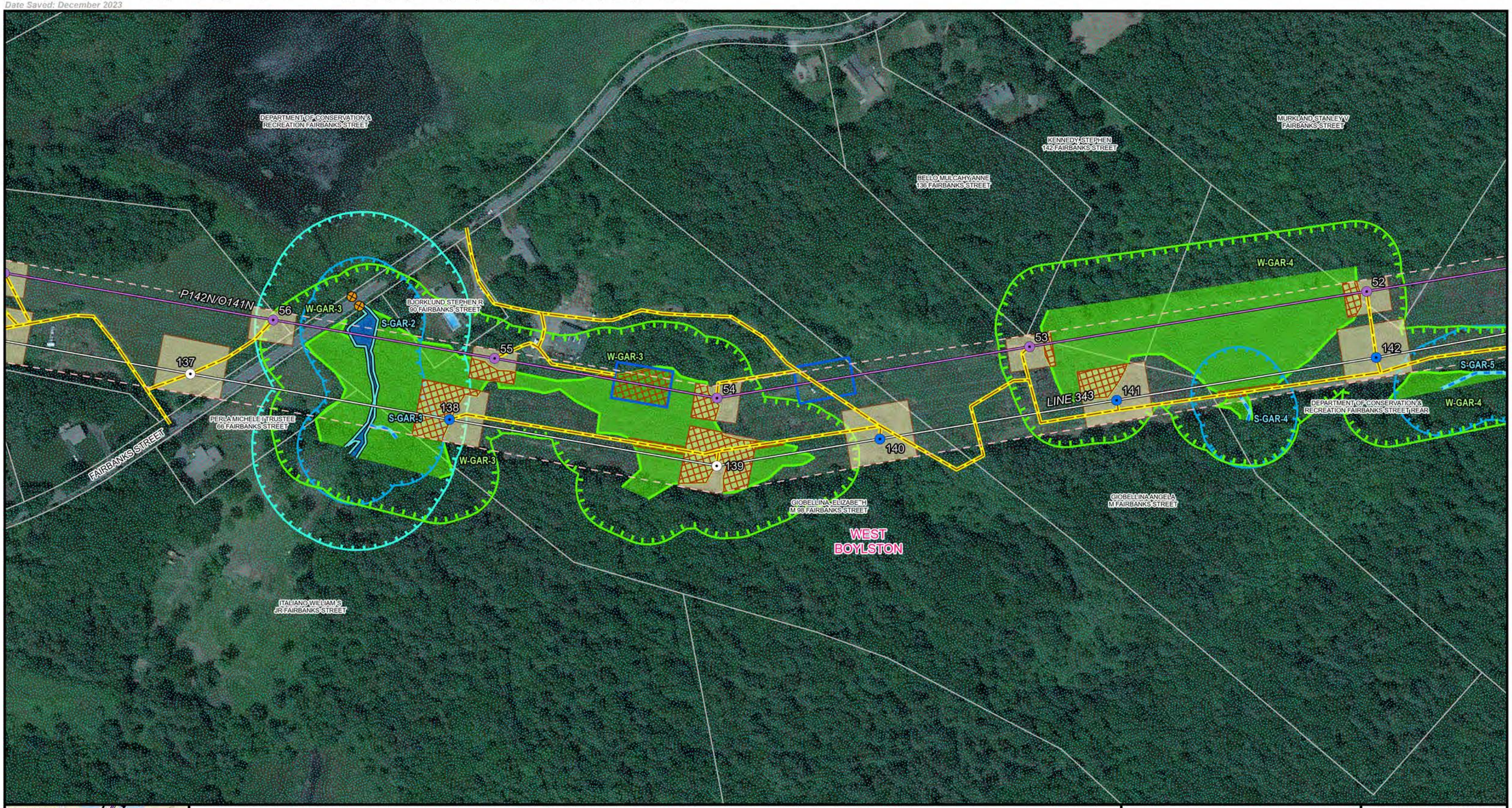
nationalgrid
TRC

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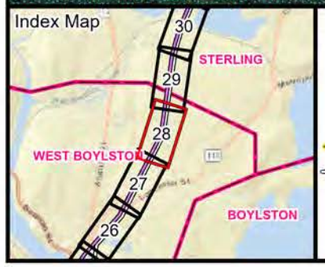


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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WEST BOYLSTON, MA**

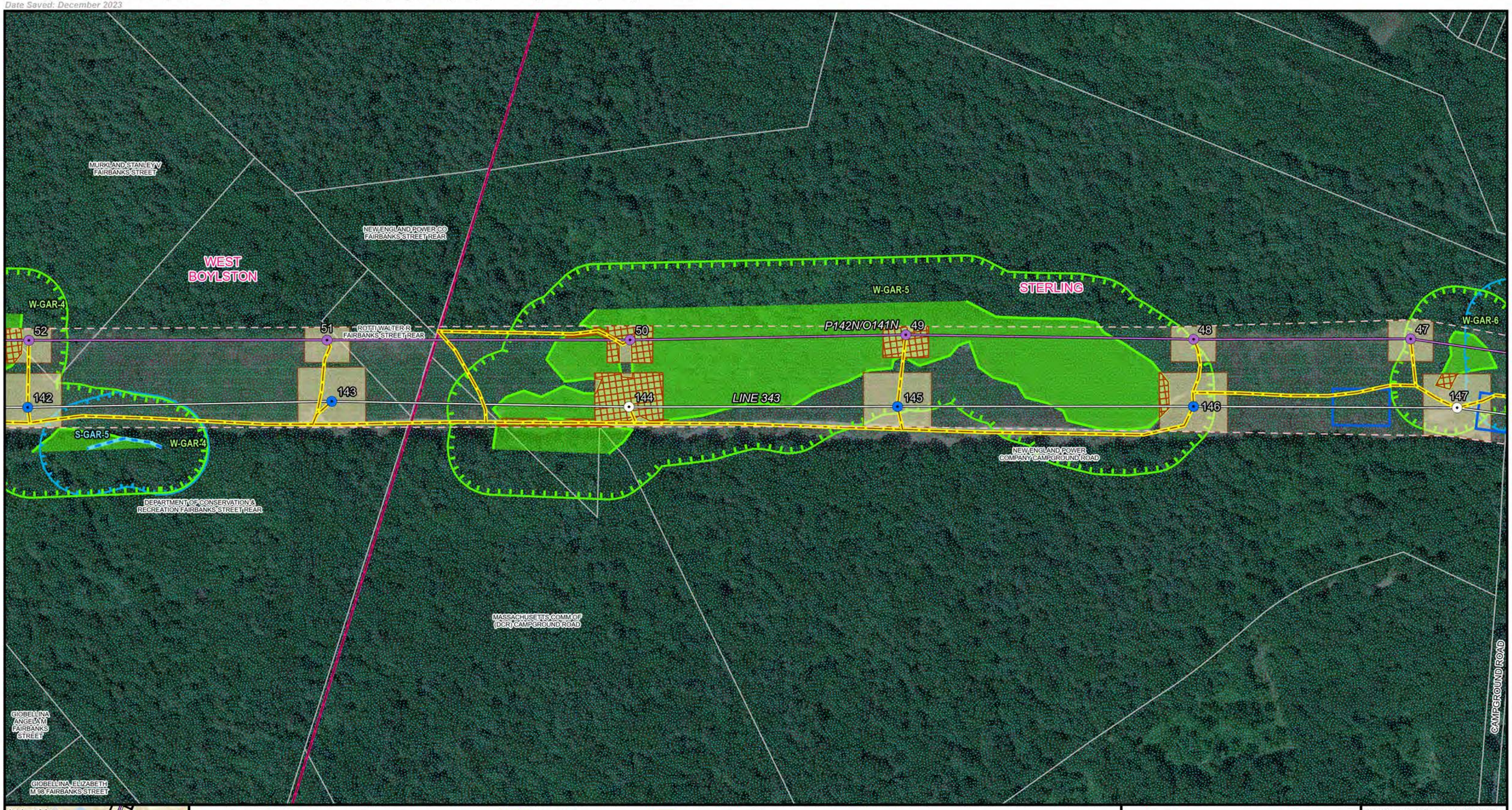


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid

TRC

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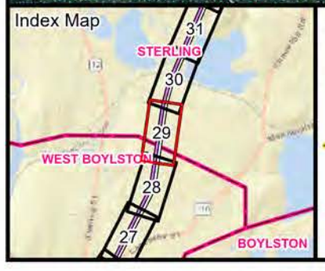


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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

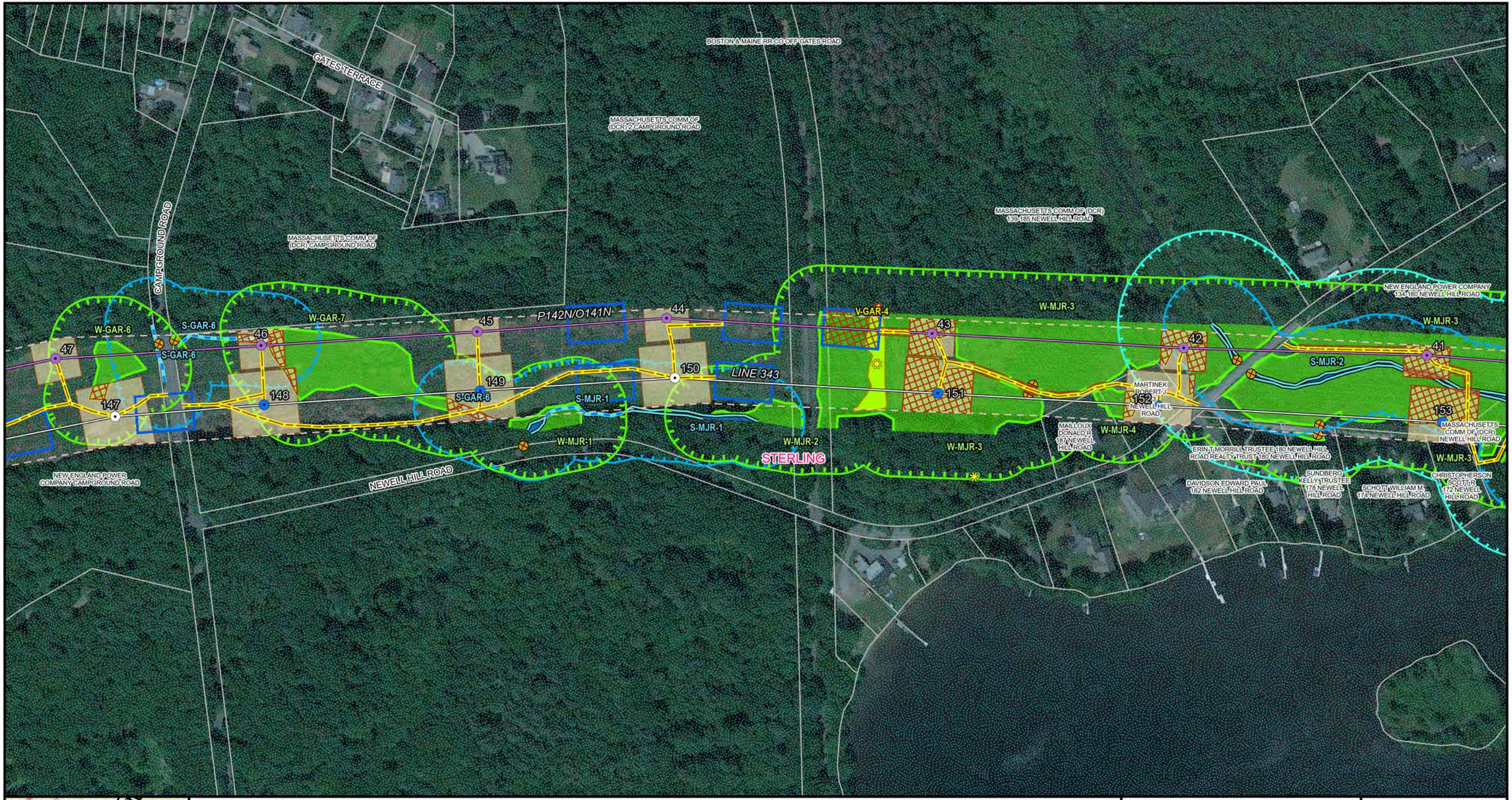
**STERLING & WEST BOYLSTON, MA**



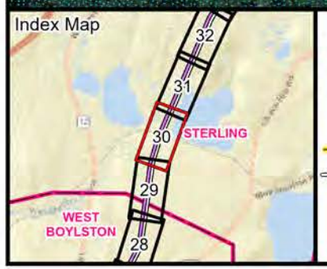
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC




Index Map




- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

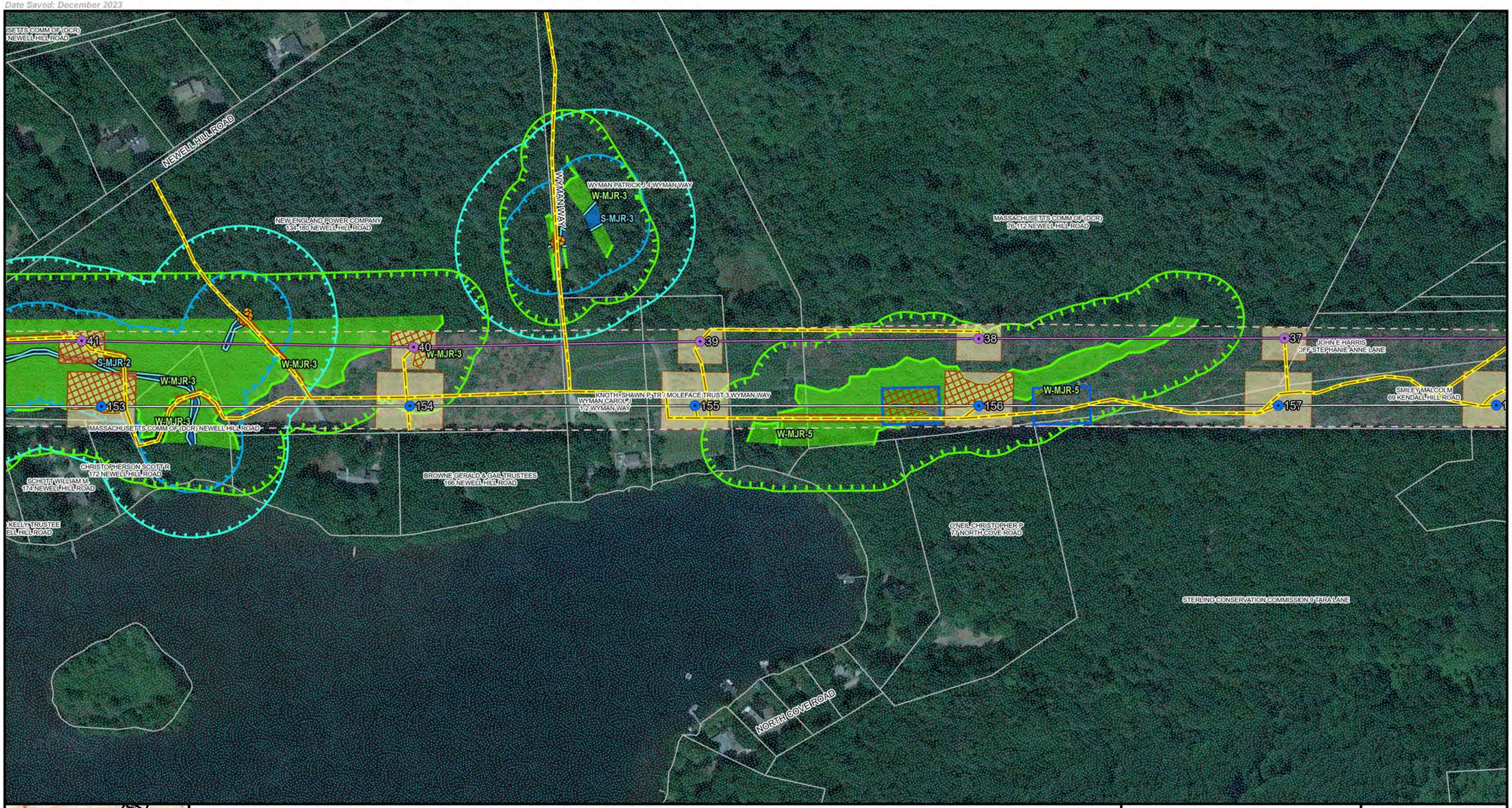
**STERLING, MA**



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

Base Map: Google Imagery

nationalgrid TRC




Index Map


- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- 100' BUFFER ZONE
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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**STERLING, MA**



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Base Map: Google Imagery

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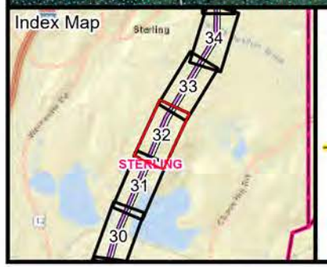
Index Map

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**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

CHASE VALERIE V
44 KENDALL HILL ROAD

PHILBIN STEPHANIE
9 CHAMBERLAIN ROAD

C.D. CORRINNE BUILDERS, INC 83 MAPLE STREET

MELONE ANTHONY RICHARD
85 MAPLE STREET

MELONE ANTHONY RICHARD
87 MAPLE STREET

C.D. CORRINE BUILDERS, INC. 81 MAPLE STREET

MAPLE STREET

NOURSE RALPH P & MARY E
0 REDSTONE HILL ROAD

NOURSE RALPH P & MARY 44 RUGG ROAD

MCCARTHY MICHAEL
102 MAPLE STREET

S-GAR-9
W-GAR-19
S-GAR-10
W-GAR-19
W-GAR-21
V-GAR
S-GAR-12

31 30 29 28 27 26
163 164 165 166 167 168
P142N/O141N
LINE 343

NEW ENGLAND POWER COMPANY MAPLE STREET

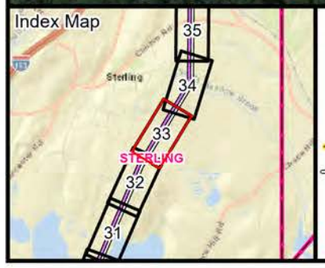
BECKWITH JANE B
94 MAPLE STREET

SCHOLTEN LINDA
96 MAPLE STREET

STERLING

BECKWITH SALLY
56 KENDALL HILL ROAD

HAGBERG NANCY
M 40 RUGG ROAD

Index Map
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**LINE 313/343 & O141/P142**

**FIGURE 2**
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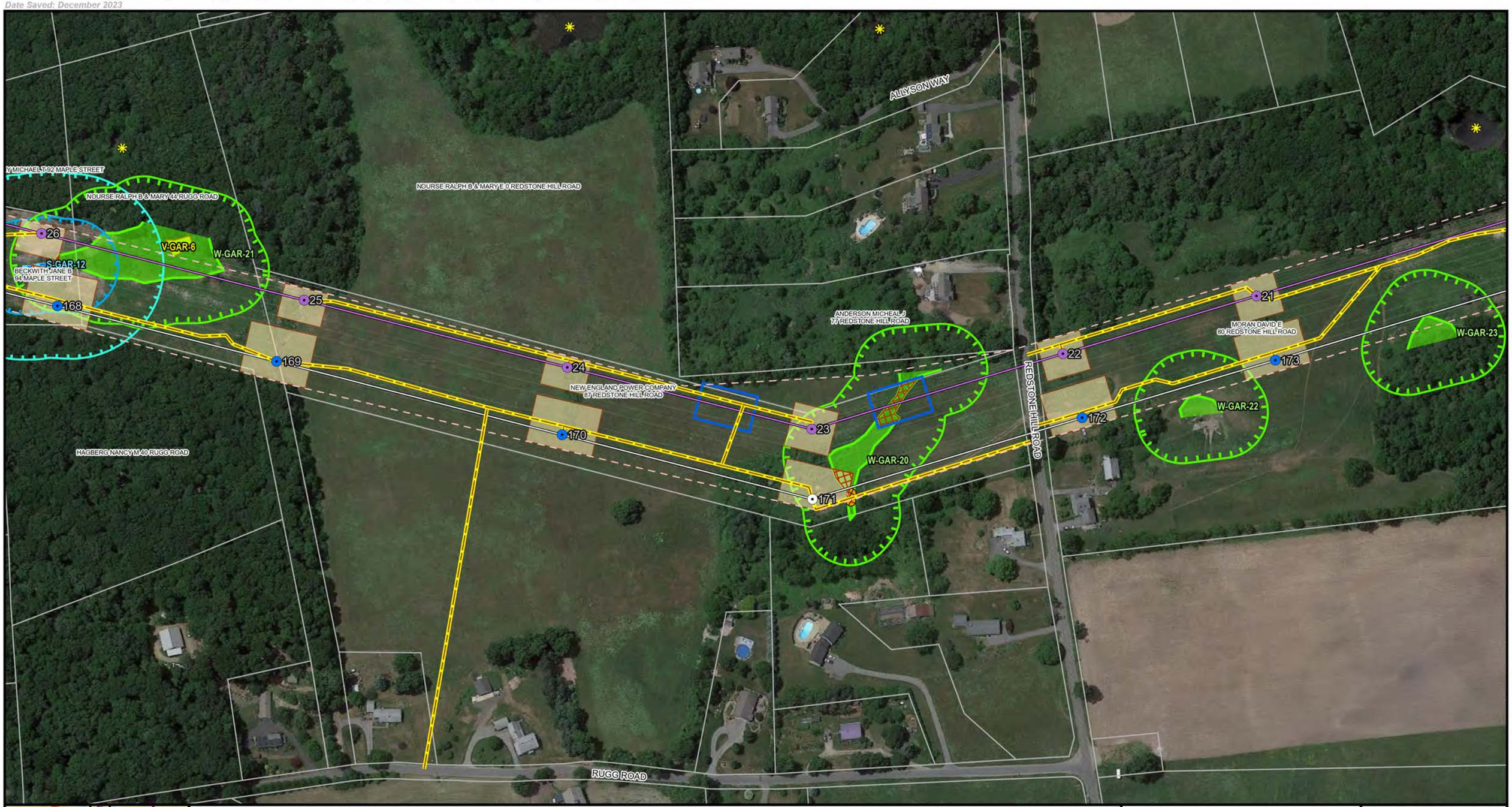
TRC

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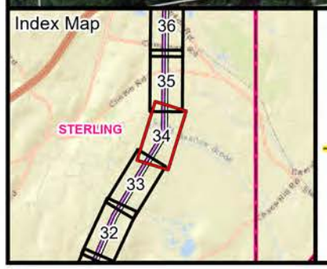


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- TYPE S ROAD
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM CENTERLINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- 200' PERENNIAL RIVERFRONT AREA
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

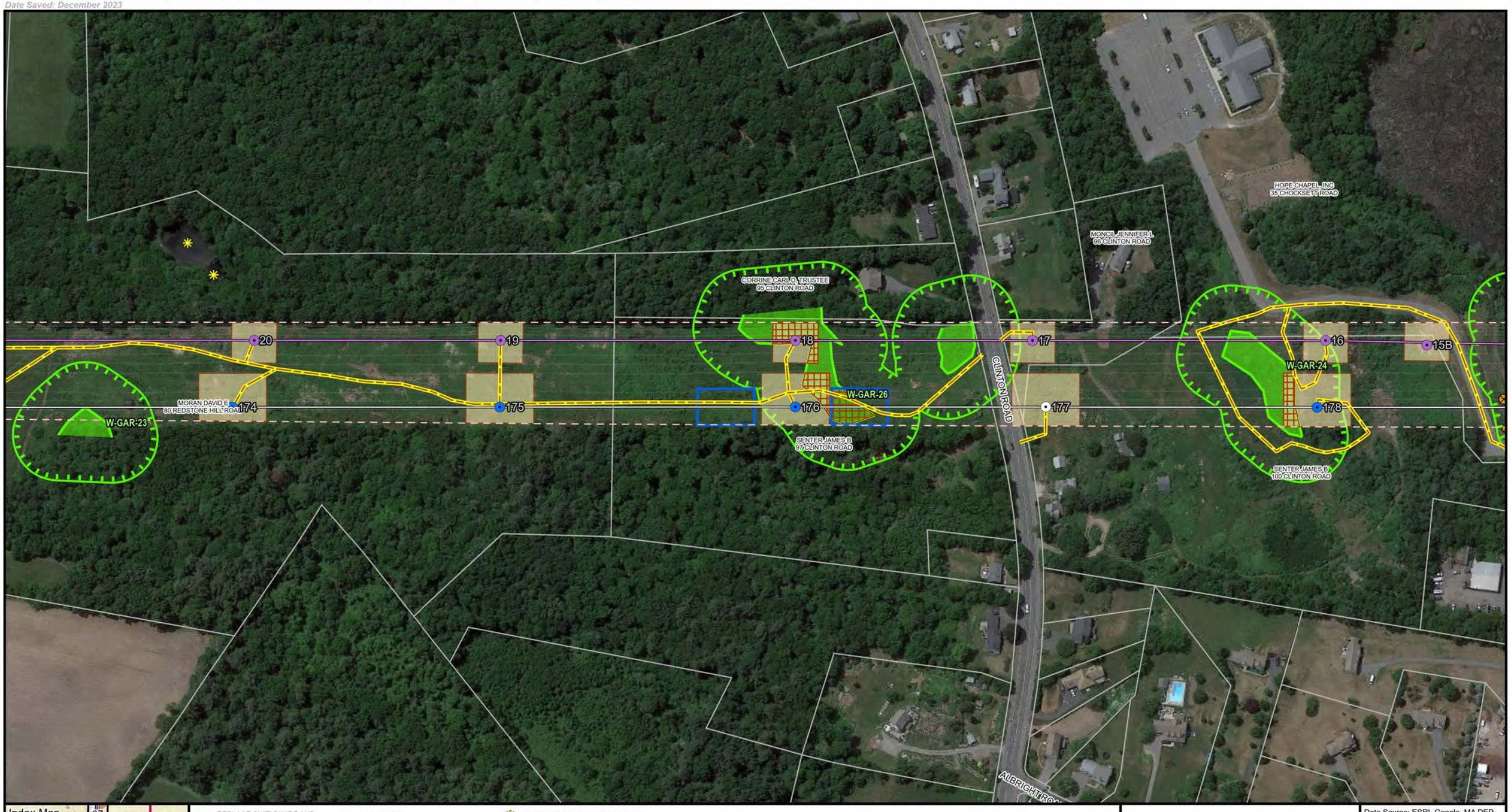
**STERLING, MA**



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

Base Map: Google Imagery

nationalgrid TRC

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- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE S ROAD
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

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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



- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE S ROAD
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- DELINEATED WETLAND
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- PARCEL BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**STERLING, MA**

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

Base Map: Google Imagery

nationalgrid
TRC



- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- LINE 343
- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
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- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM EDGE OF BANK
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

## LINE 313/343 & O141/P142

**FIGURE 2**
**ACCESS PLANS**

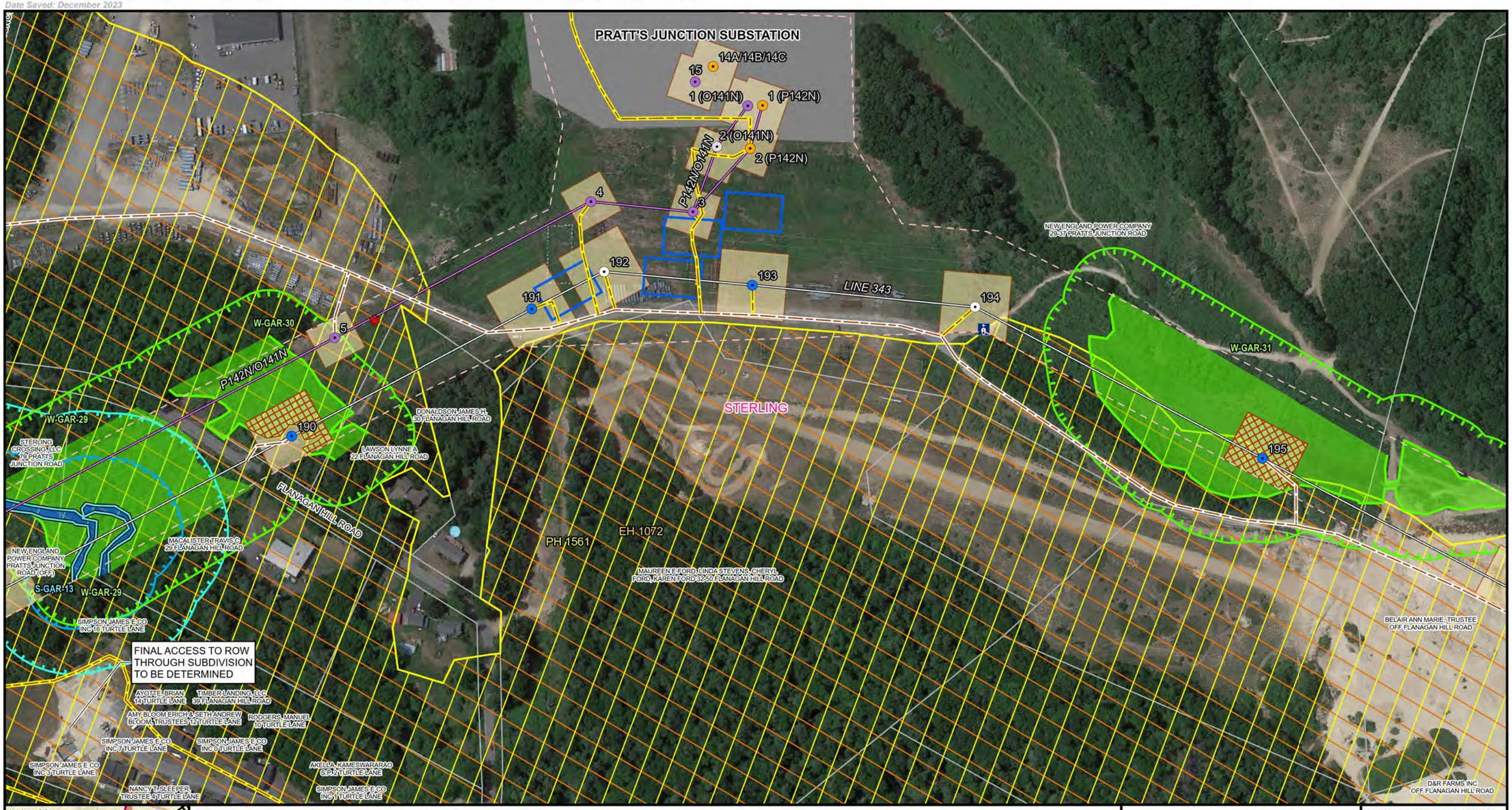
**STERLING, MA**



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

Base Map: Google Imagery

nationalgrid TRC

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- 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)
- TYPE R ROAD
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- P142N/O141N
- PULL PAD
- TIMBER MATTING
- WORKPAD
- NHESP CERTIFIED VERNAL POOL
- 100' BUFFER ZONE
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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

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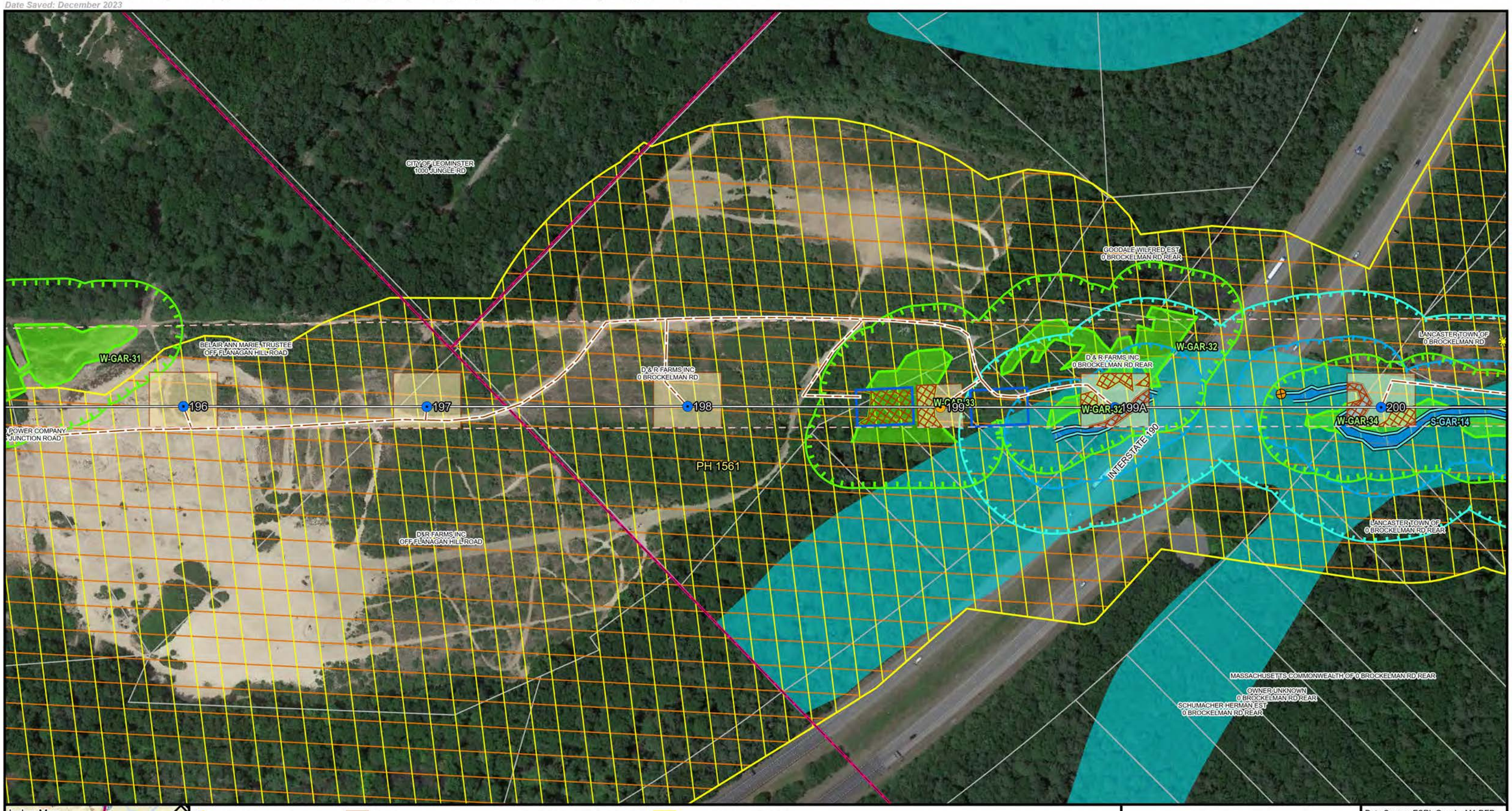
TRC

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- REPLACE SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- LINE 343
- PULL PAD
- TIMBER MATTING
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- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM EDGE OF BANK
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- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- NHESP PRIORITY HABITAT - 2021
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- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

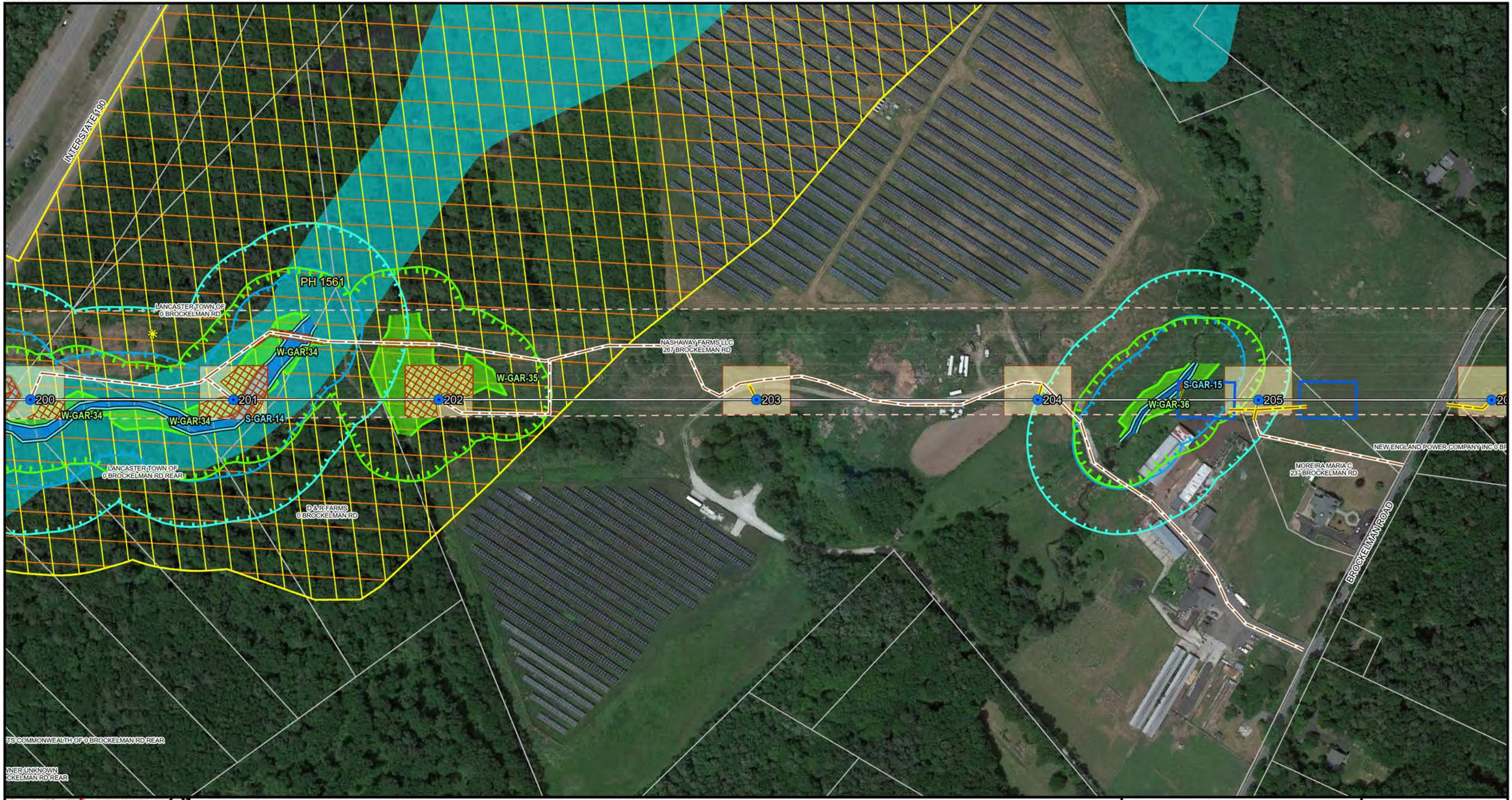
**LANCASTER & STERLING, MA**



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

Base Map: Google Imagery

nationalgrid
TRC

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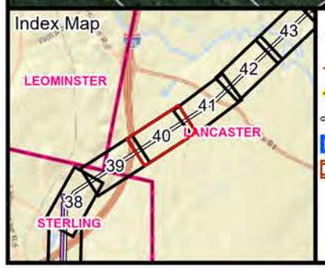


- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
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1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

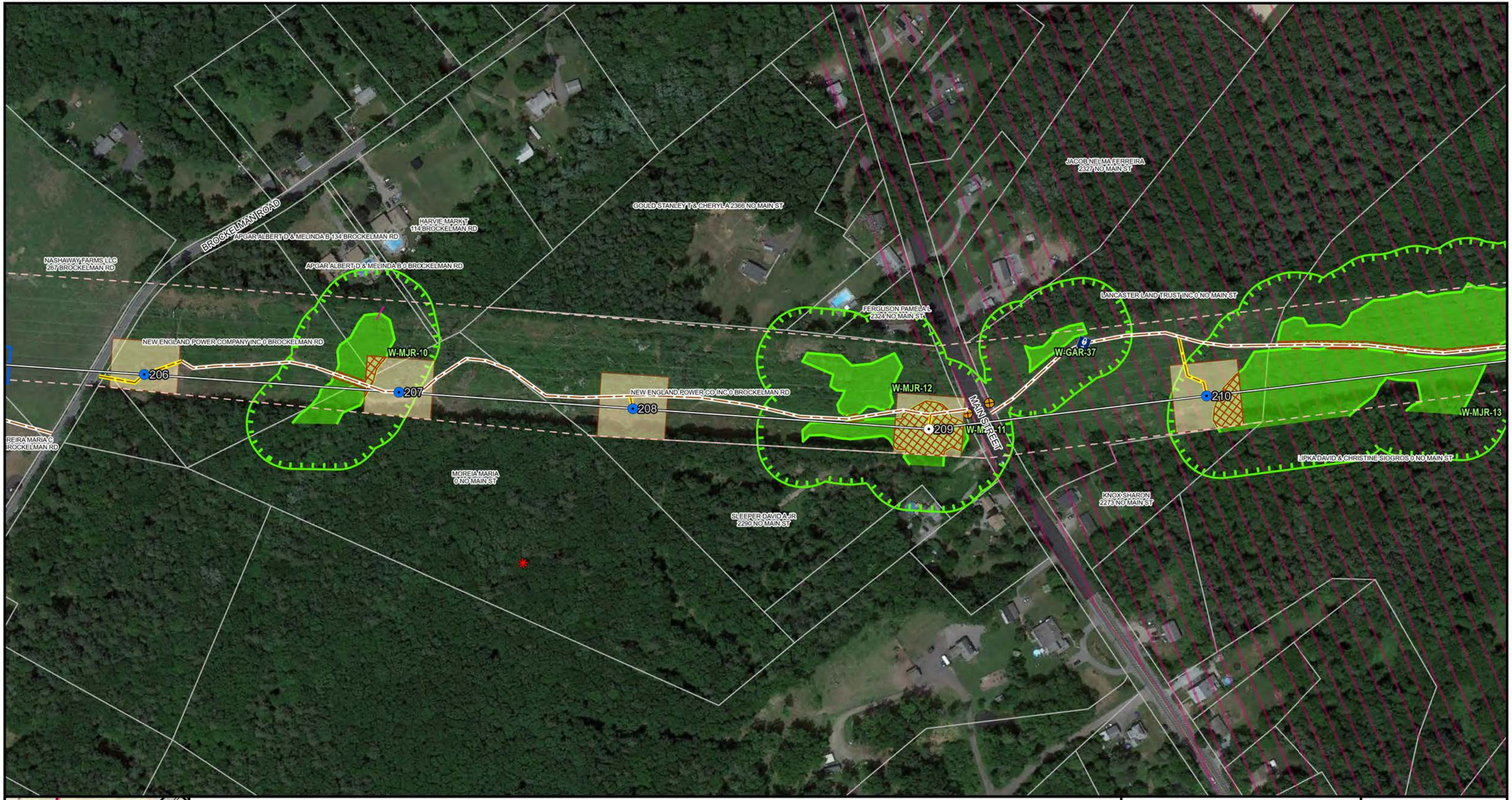
**LANCASTER, MA**



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

Base Map: Google Imagery

nationalgrid
TRC





- ACCESS GATE
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- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
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- WORKPAD
- CULVERT
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- 100' BUFFER ZONE
- DELINEATED NON-JD DRAINAGE LINE
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- DELINEATED WETLAND
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- APPROXIMATE EDGE OF ROW
- PARCEL 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

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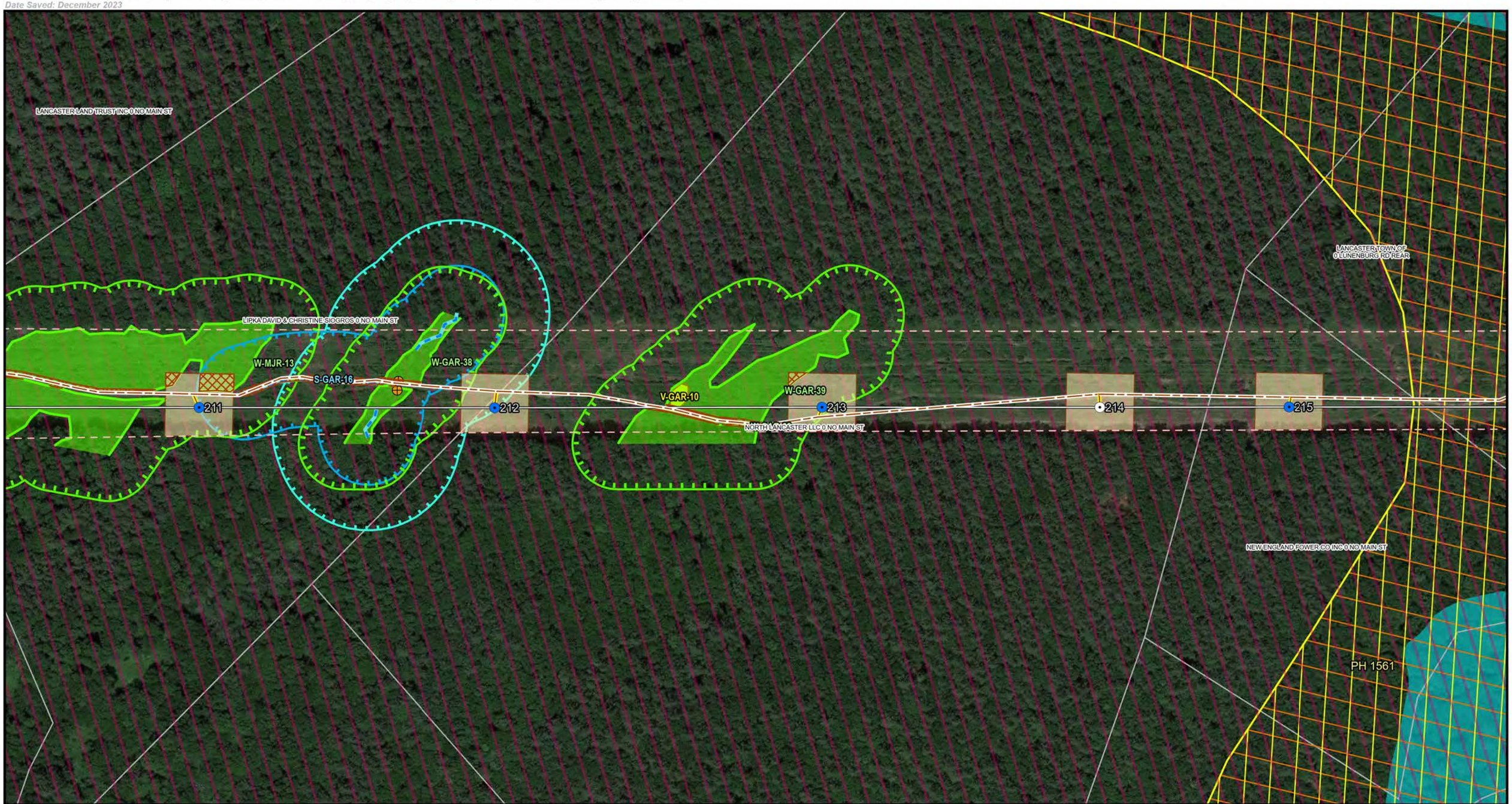
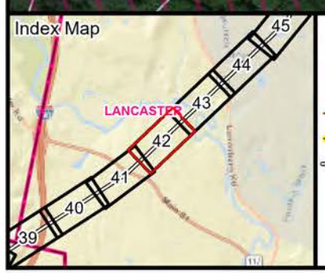
nationalgrid
TRC




- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
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1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

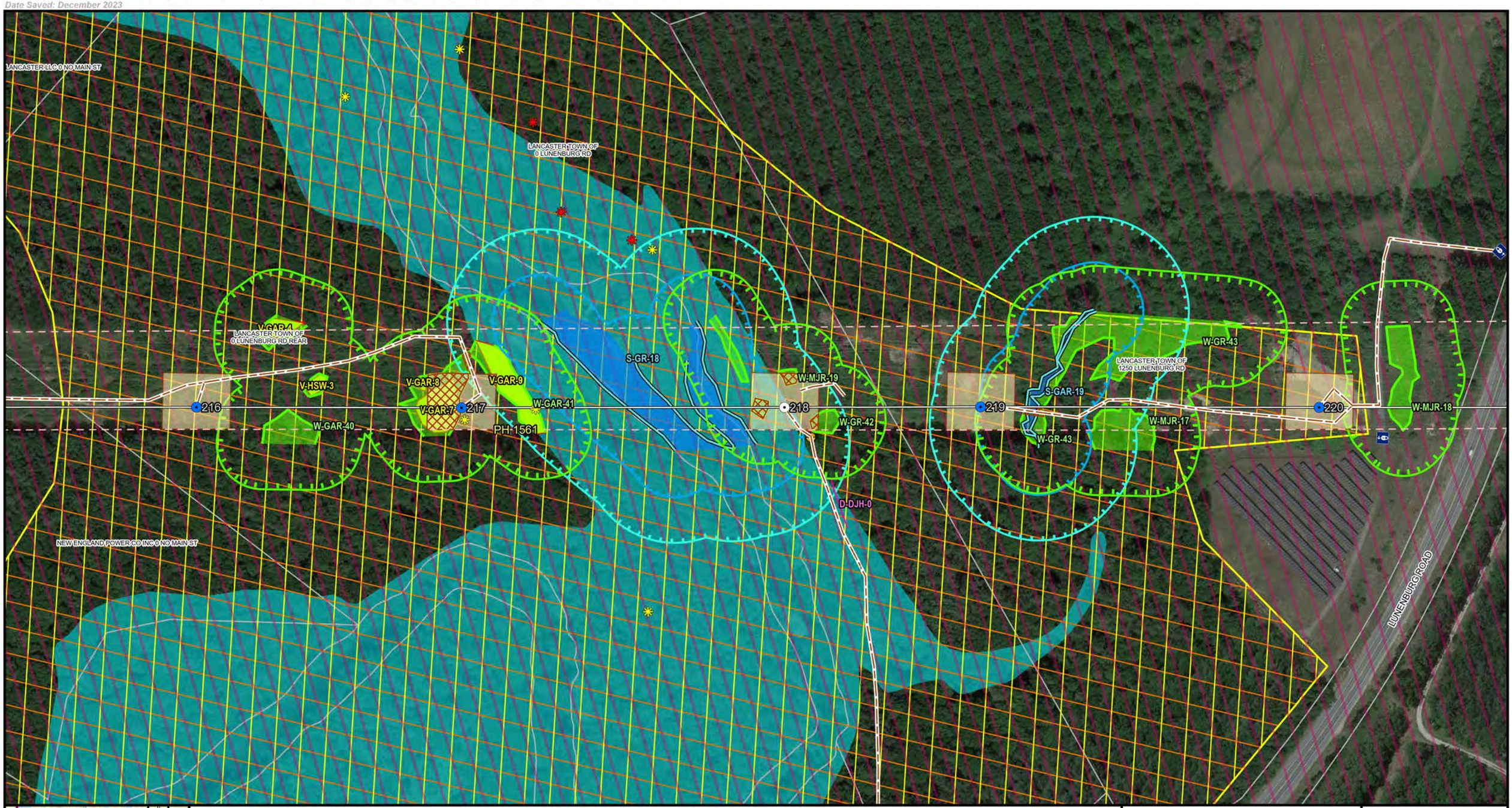
**LANCASTER, MA**



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

Base Map: Google Imagery

nationalgrid
TRC

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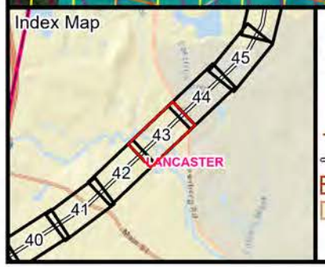


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1 inch = 200 Feet

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

LANCASTER TOWN OF
1250 LUNENBURG RD

LUNENBURG ROAD

1561

W-MJR-18

221

222

223

224

225

S-MJR-7

W-MJR-16

S-MJR-7

S-MJR-7

W-MJR-16

W-MJR-15

W-MJR-14

ROAD TO FORT DEVENS INTERNAL ROAD SYSTEM

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- TYPE S ROAD
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- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM EDGE OF BANK
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- 200' PERENNIAL RIVERFRONT AREA
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- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL 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



- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
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- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
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- DELINEATED WETLAND
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- APPROXIMATE EDGE OF ROW
- PARCEL 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

FIRE ROAD EIGHT
STAGECOACH ROAD
MCKENNA MICHAEL F & 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
HAMEL CHRISTOPHER R & JANELLE D 141 OLD UNION TURNPIKE
REVELL AARON R & AMY K 94 OLD UNION TURNPIKE
RW FORT POND REALTY LLC 580 FORT POND RD
CHISHOLM WILLIAM D TR 696 FORT POND
OLD UNION TURNPIKE
ROUTE 3
FORT POND ROAD
RAMP-FORT POND RD (SB)
W-KCF-21
W-KCF-21
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231
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ROAD TO FORT DEVENS INTERNAL ROAD SYSTEM

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- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

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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


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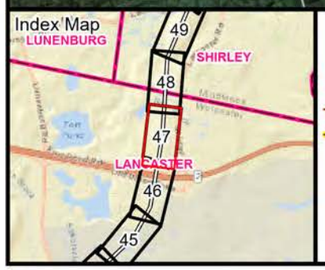


- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

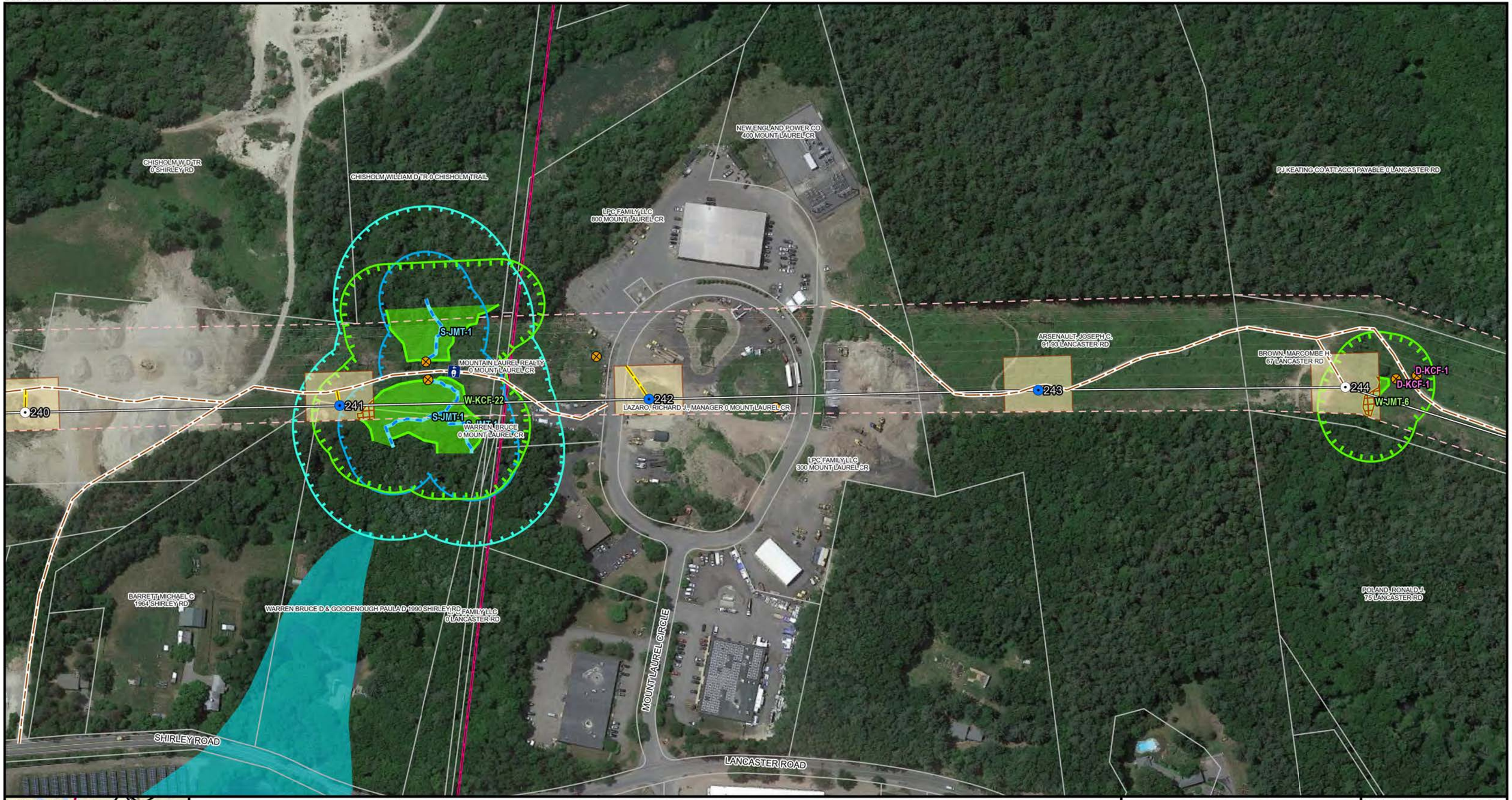
**LANCASTER, MA**

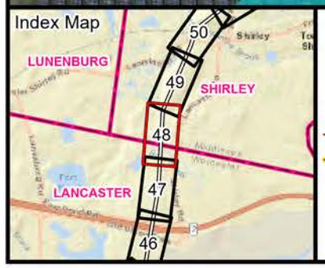


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC




- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- LINE 343
- TIMBER MATTING
- WORKPAD
- CULVERT
- 100' BUFFER ZONE
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- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

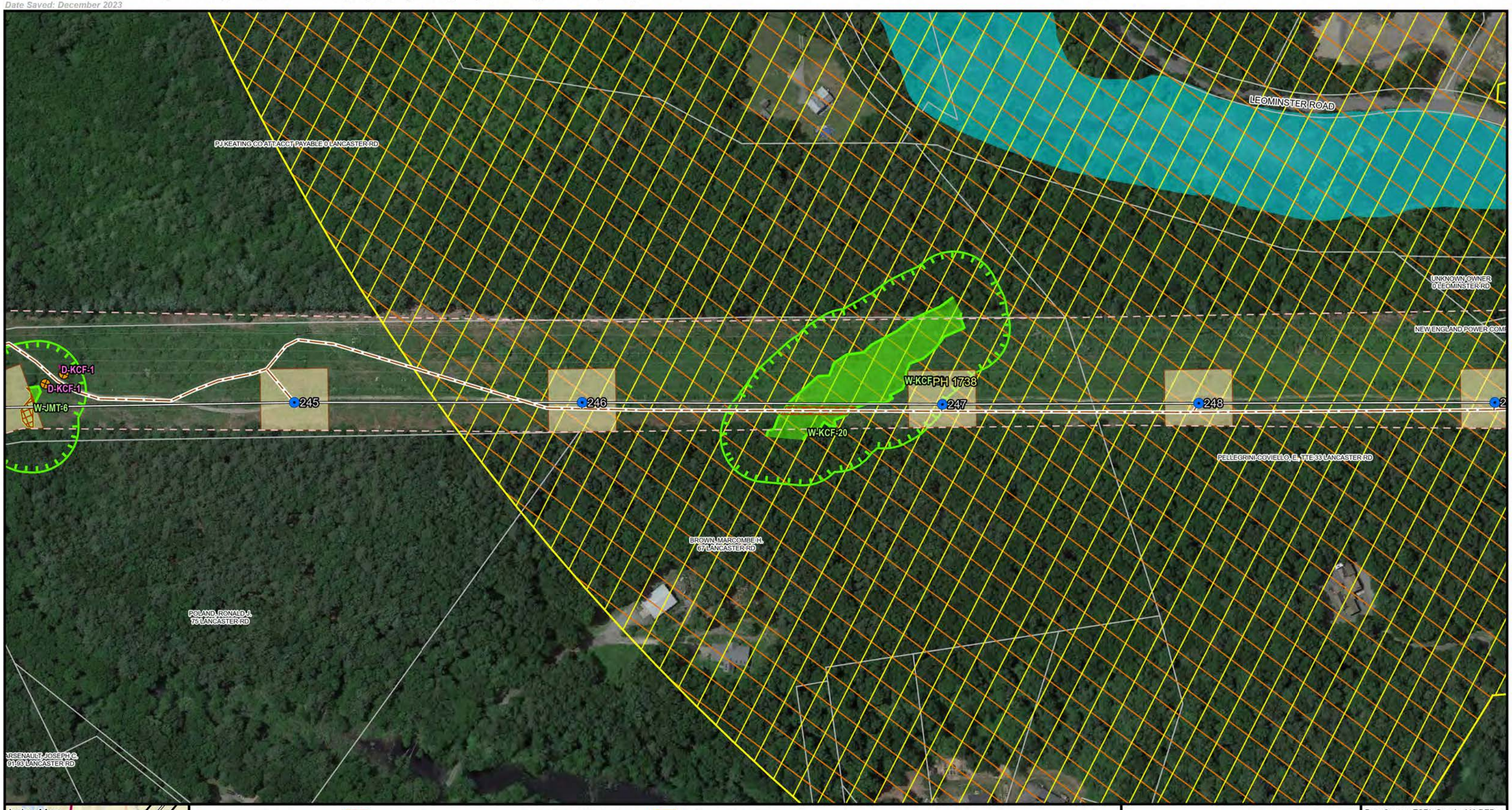
**SHIRLEY & LANCASTER, MA**



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

Base Map: Google Imagery

nationalgrid TRC

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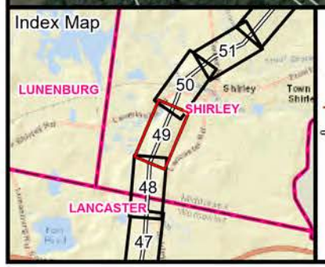



- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- LINE 343
- TIMBER MATTING
- WORKPAD
- CULVERT
- 100' BUFFER ZONE
- DELINEATED NON-JD DRAINAGE LINE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- NHESP PRIORITY HABITAT - 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

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

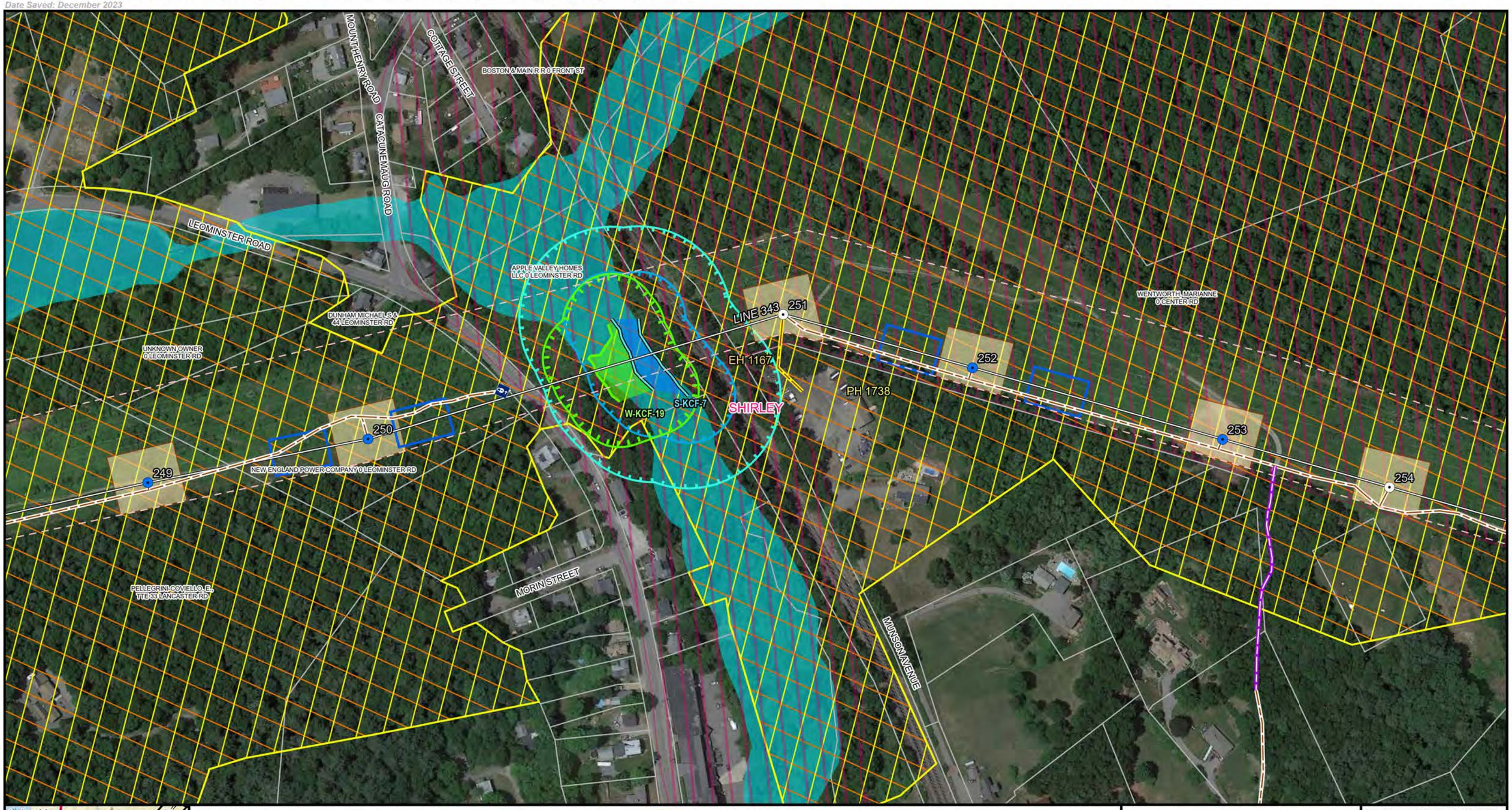
**SHIRLEY, MA**



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

Base Map: Google Imagery

nationalgrid
TRC

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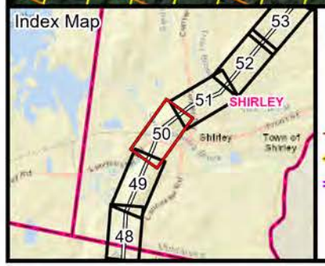


- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- ALTERNATE
- LINE 343
- PULL PAD
- WORKPAD
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM EDGE OF BANK
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
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N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**SHIRLEY, MA**

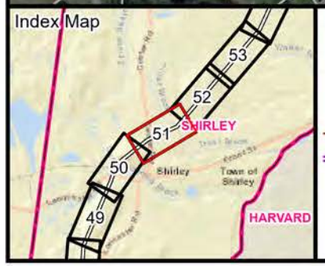


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC


Index Map




- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- ALTERNATE
- LINE 343
- TIMBER MATTING
- WORKPAD
- 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
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**SHIRLEY, MA**



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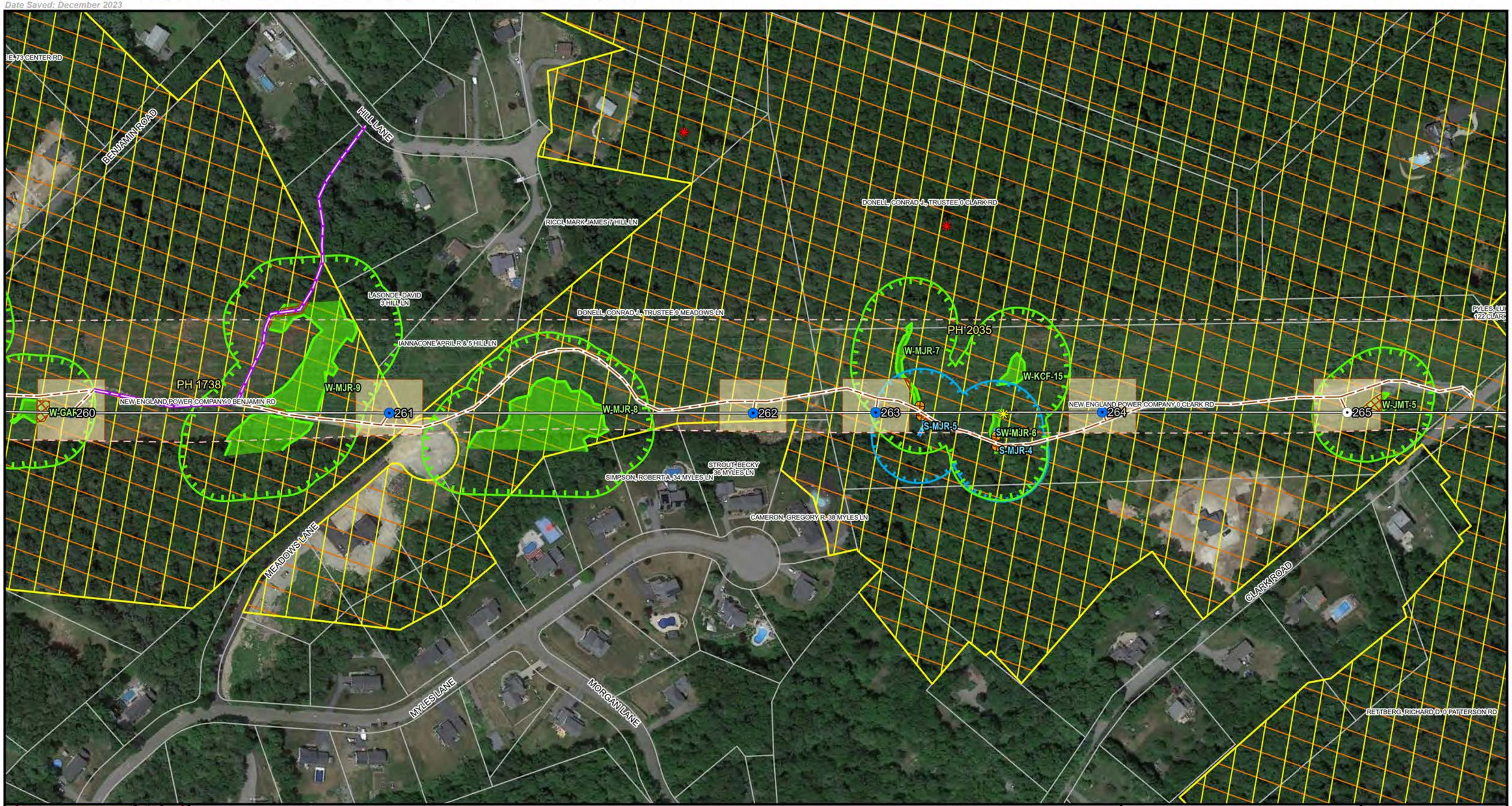
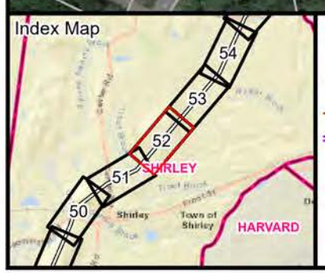
nationalgrid
TRC




Index Map




- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- ALTERNATE
- LINE 343
- TIMBER MATTING
- WORKPAD
- 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
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

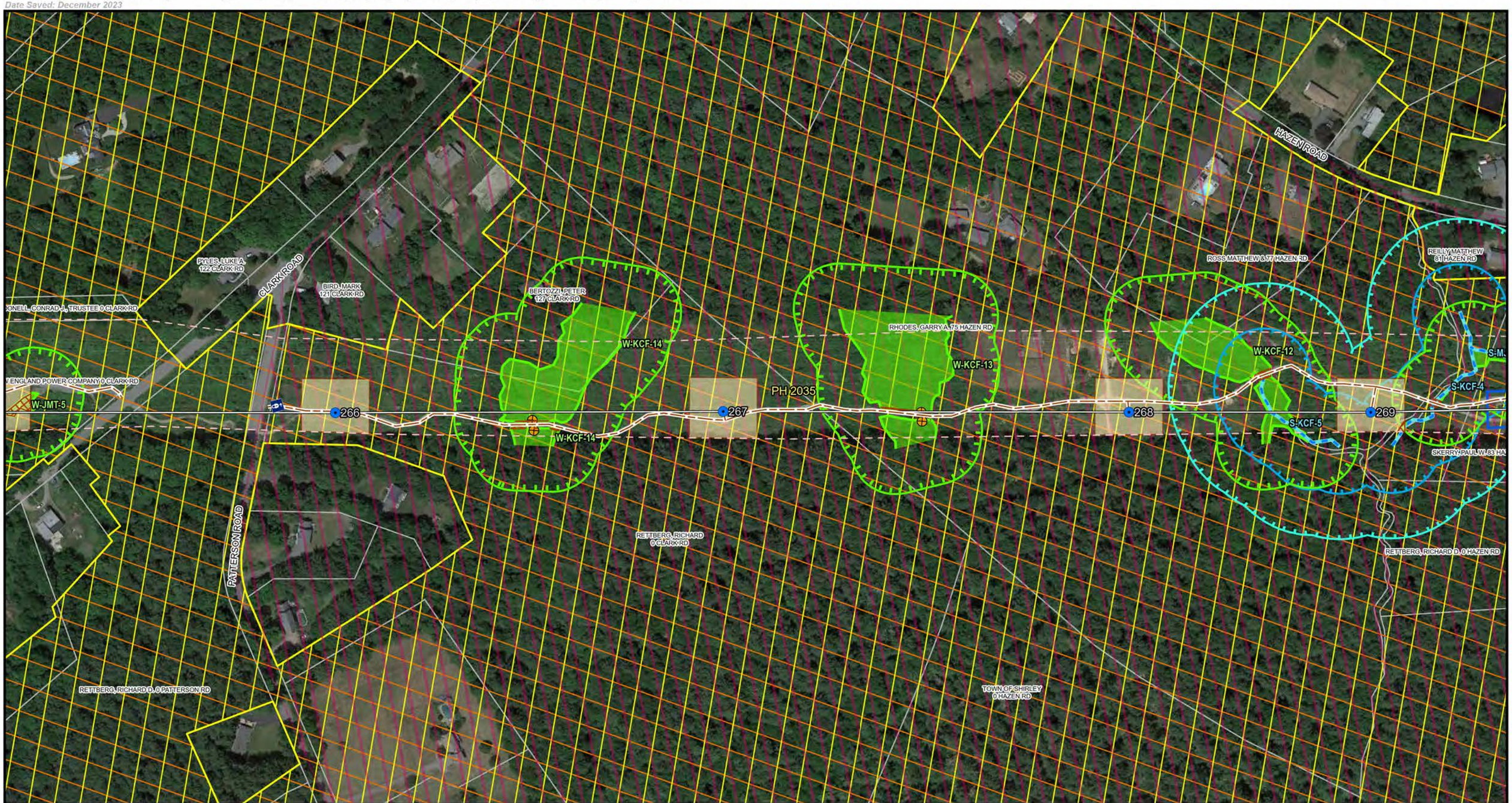
**SHIRLEY, MA**

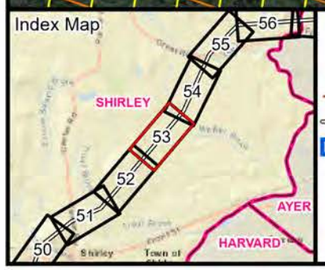


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC




ACCESS GATE
REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
TYPE R ROAD
LINE 343
PULL PAD
TIMBER MATTING
WORKPAD
CULVERT
100' BUFFER ZONE
100' STREAM AND SURFACE WATER BUFFER
DELINEATED STREAM CENTERLINE
DELINEATED WETLAND BOUNDARY LINE
DELINEATED WETLAND
200' PERENNIAL RIVERFRONT AREA
AREA OF CRITICAL ENVIRONMENTAL CONCERN
NHESP PRIORITY HABITAT - 2021
NHESP ESTIMATED HABITAT - 2021
APPROXIMATE EDGE OF ROW
PARCEL BOUNDARY

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**SHIRLEY, MA**

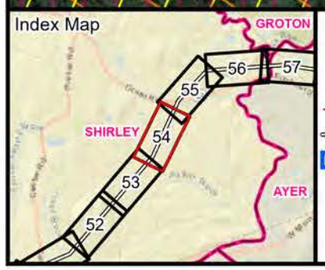


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC


Index Map




- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD
- 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
- DELINEATED VERNAL POOL AREA
- 200' PERENNIAL RIVERFRONT AREA
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

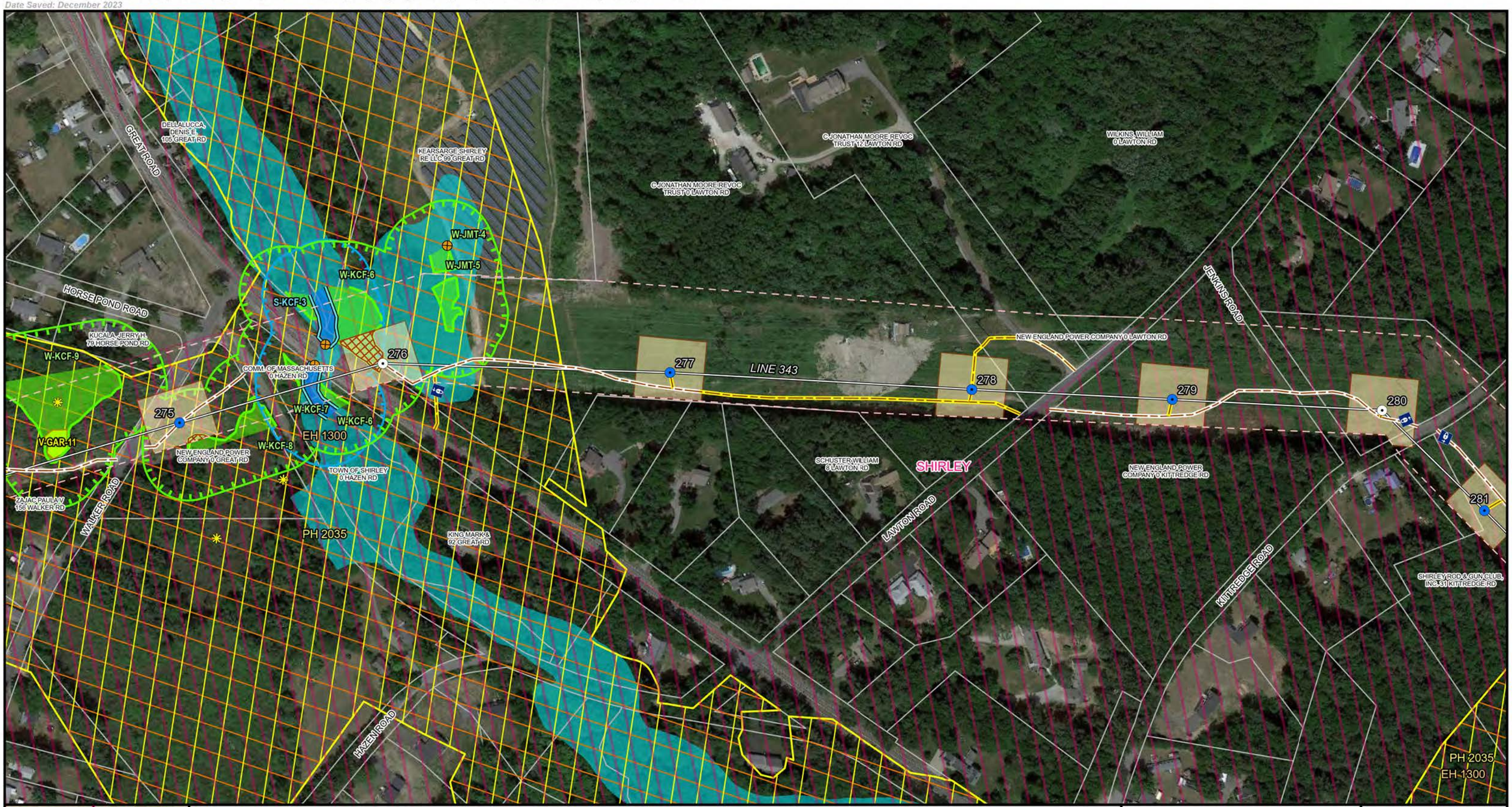
**SHIRLEY, MA**



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

Base Map: Google Imagery

nationalgrid
TRC

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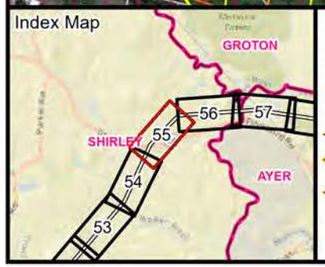


- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM EDGE OF BANK
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
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- NHESP ESTIMATED HABITAT - 2021
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- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

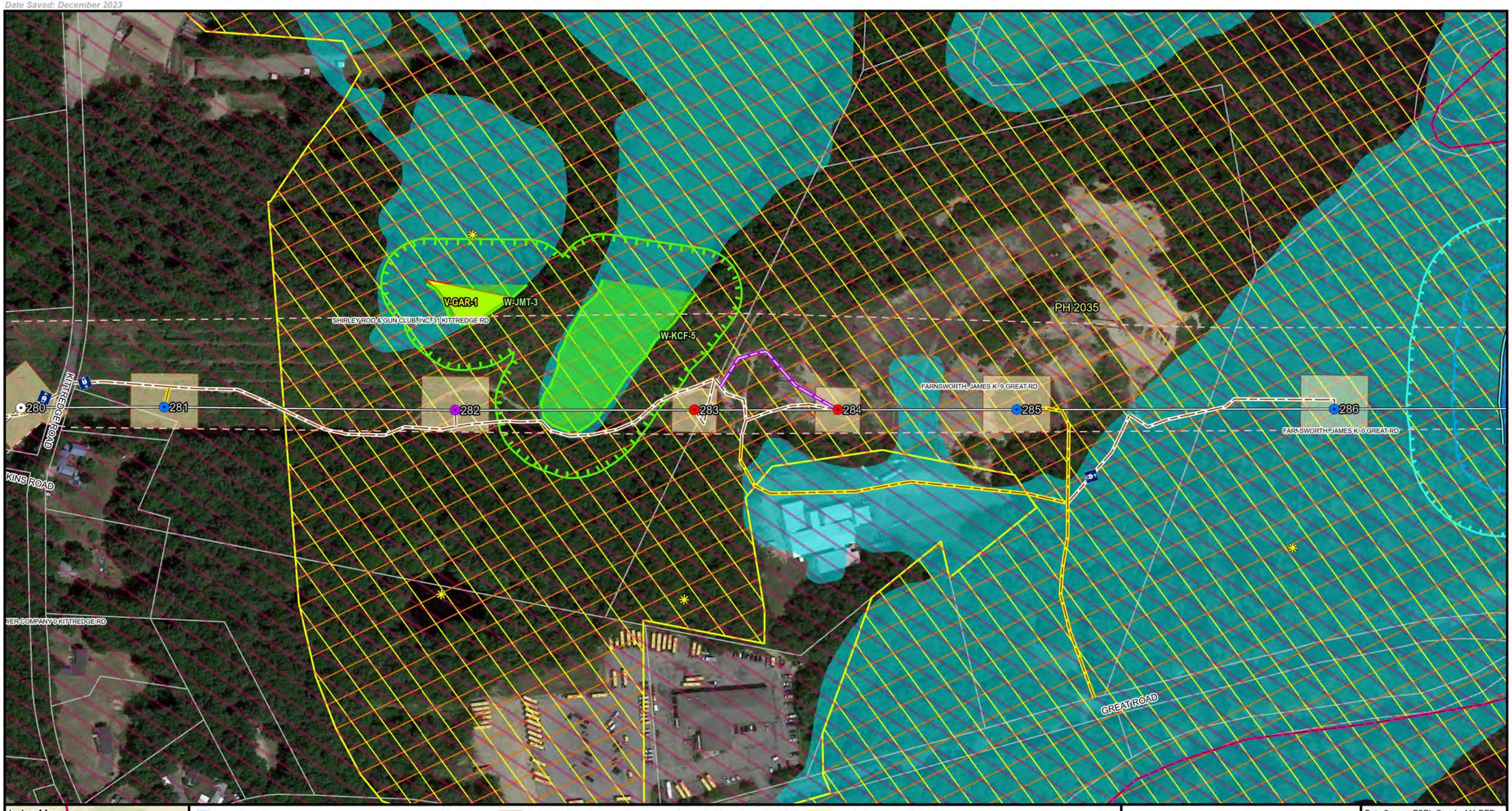
**SHIRLEY, MA**

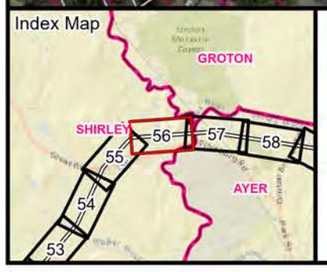


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC




- ACCESS GATE
- REMOVE STRUCTURE & REPLACE SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE & OTHER MAINTENANCE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- ALTERNATE
- LINE 343
- TIMBER MATTING
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM EDGE OF BANK
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
- 200' PERENNIAL RIVERFRONT 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

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**AYER & SHIRLEY, MA**



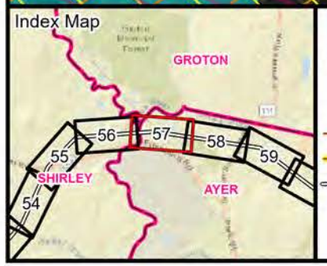
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC

GROTON
SHIRLEY
AYER
EH 1300
PH 2035
W-KCF-4
S-KCF-2
V-GAR-12
LINE 343
287
288
289
290
291
292
99 FITCHBURG ROAD LLP
99 FITCHBURG ROAD
99 FITCHBURG ROAD LLP
0 FITCHBURG ROAD
COMMONWEALTH OF MASSACHUSETTS
0 GROTON SHIRLEY ROAD
NEW ENGLAND POWER CO
0 GROTON SHIRLEY ROAD
91 FITCHBURG ROAD LLC
91 FITCHBURG ROAD
FARNSWORTH, JAMES K
0 GREAT RD
GROTON SHIRLEY ROAD
FITCHBURG ROAD
GREAT ROAD
JAMES

Index Map




- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1): REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- DELINEATED STREAM EDGE OF BANK
- DELINEATED SURFACE WATER
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Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**AYER & SHIRLEY, MA**



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

Base Map: Google Imagery

nationalgrid
TRC

COMMONWEALTH OF MASSACHUSETTS
0 GROTON SHIRLEY ROAD

JAMES BROOK WAY

AYER

GROTON SHIRLEY ROAD

WOZNAC MICHAEL W - JT
22 GROTON SHIRLEY ROAD

GORDON KEVIN M
18 GROTON SHIRLEY ROAD

CHITRA KARKI
24 GROTON SHIRLEY ROAD

REYNOLDS GARY M
20 GROTON SHIRLEY ROAD

GRIFFIN PATRICK M
14 GROTON SHIRLEY ROAD

RAJAGOPALAN GANESAN - TE
26 GROTON SHIRLEY ROAD

MULDOON FREDERICK W - TE
8 GROTON SHIRLEY ROAD

KELLY SANDRA M
91 GROTON SCHOOL ROAD

GOODWIN JESSE F
12 GROTON SHIRLEY ROAD

W-KCF-2

GAR-12

292 293 294 295 LINE 343 296 297 298

W-KCF-4

NEW ENGLAND POWER CO
0 GROTON SHIRLEY ROAD

EH 1300

PH 2035

NEW ENGLAND POWER CO
0 GROTON SCHOOL ROAD

ANDERSON MARKS - TE
84 OFF GROTON SCHOOL ROAD

OFF GROTON SCHOOL ROAD

GROTON SCHOOL ROAD

ROSEWOOD AVENUE

PHEASANT CIRCLE

91 FITCHBURG ROAD LLC
91 FITCHBURG ROAD

Index Map


- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- LINE 343
- TIMBER MATTING
- WORKPAD
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- DELINEATED VERNAL POOL AREA
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**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**AYER, MA**



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Base Map: Google Imagery

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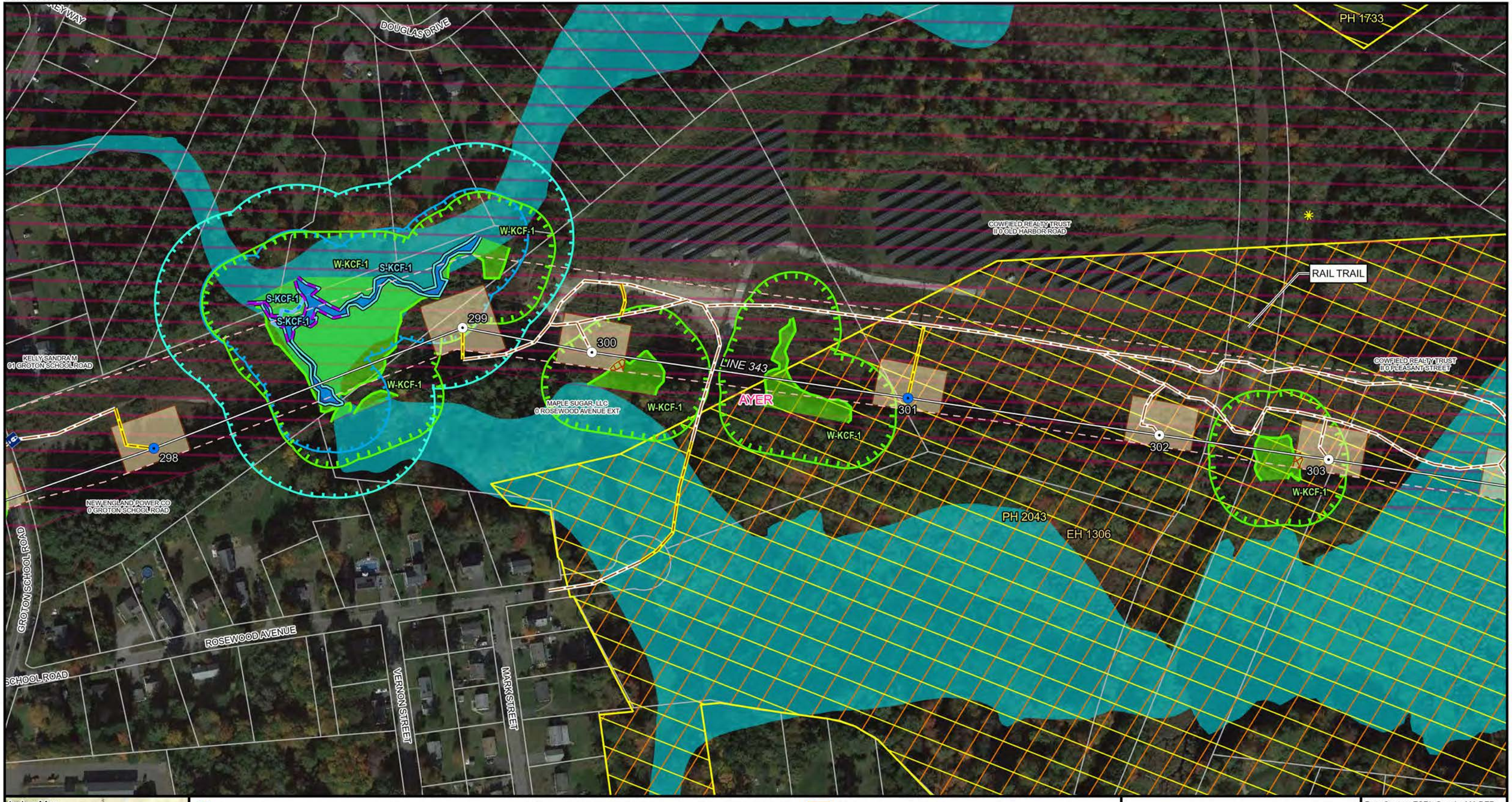


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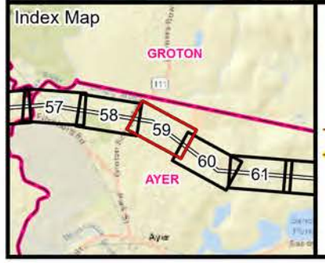


- ACCESS GATE
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- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
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- TIMBER MATTING
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 100' STREAM AND SURFACE WATER BUFFER
- APPROXIMATED STREAM EDGE OF BANK
- APPROXIMATED PERENNIAL STREAM CENTERLINE
- DELINEATED STREAM EDGE OF BANK
- DELINEATED STREAM CENTERLINE
- DELINEATED SURFACE WATER
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
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0 100 200
Feet

**LINE 313/343 & O141/P142**

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**ACCESS PLANS**

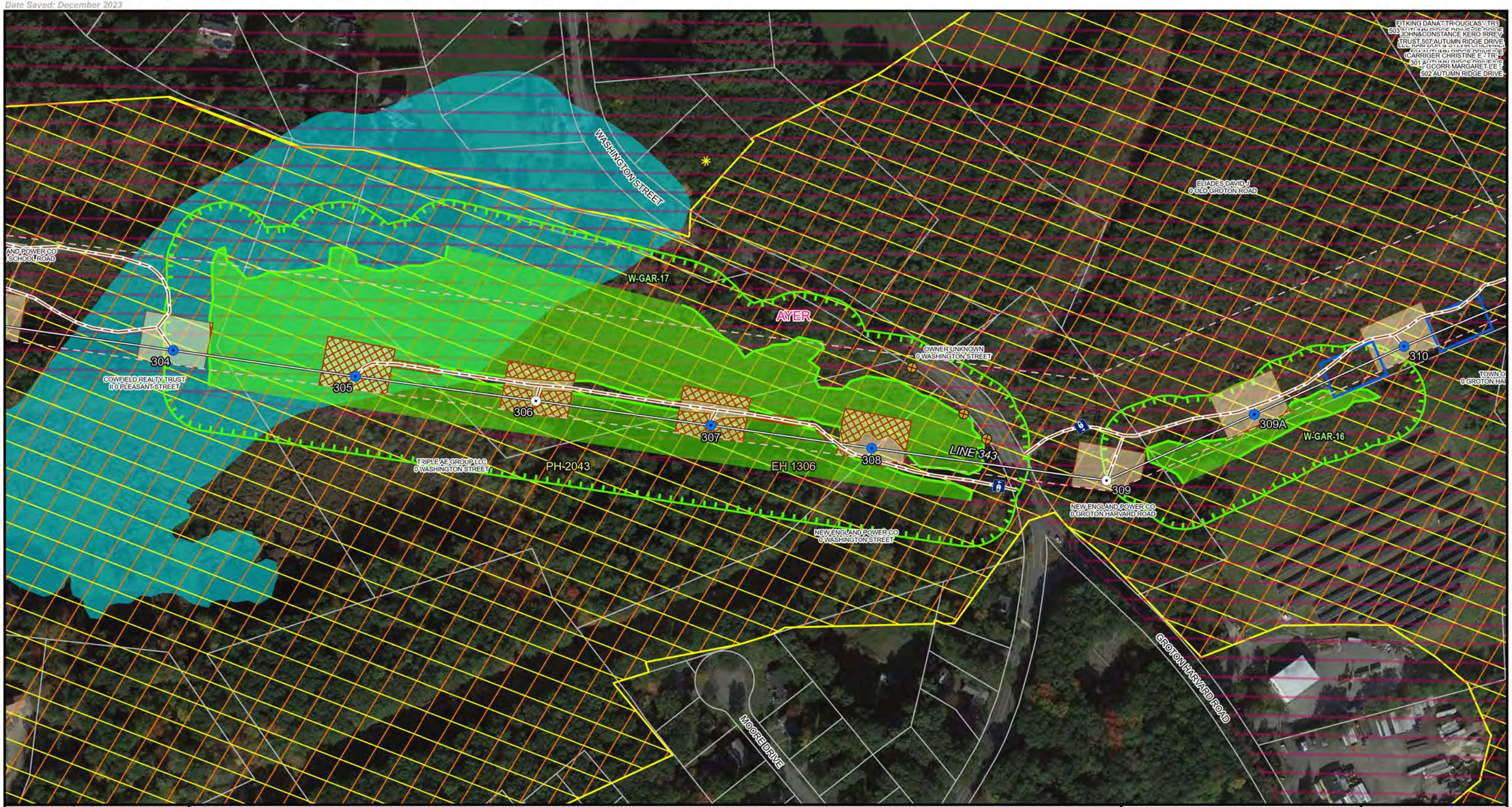
**AYER, MA**



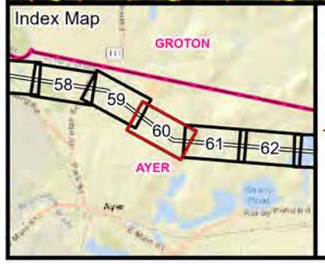
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC




Index Map




- ACCESS GATE
- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- AREA OF CRITICAL ENVIRONMENTAL CONCERN
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
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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

HALL DENIS EDWARD -TE YJ_TR
206 AUTUMN RIDGE DRIVE 3E DRIVE

O'SULLIVAN JEFFREY PJ'GROVE PAUL S
606 AUTUMN RIDGE DRIVE UMN RIDGE DRIVE

KUBICK EKIZABETH T
406 AUTUMN RIDGE DRIVE

O'REGAN JOHN Y"-ITI
404 AUTUMN RIDGE DRIVE

LONG JAMES R JR I
706 AUTUMN RIDGE DRIVE

GEARY GORDON B_TE
104 AUTUMN RIDGE DRIVE

CURLEY PAUL F -TE
805 AUTUMN RIDGE DRIVE

BENSETLER A HARDIMAN RITA STODDART MARION L
103 AUTU501 AUTUMN RIDGE DRIVE UMN RIDGE DRIVE

BENNETT KEVIN PJGLAS_TR
304 AUTUMN RIDGE DRIVE 3E DRIVE

SANDCZ HELEN K
505 AUTUMN RIDGE DRIVE

NASH ARTHUR H_TR
407 AUTUMN RIDGE DRIVE

MARLE SUGAR LLC
0 SNAKE HILL ROAD

MOORE CALVIN E_TR
1 RATTLESNAKE DRIVE

PEANAMANDA JOSEPH J_TE
105 AUTUMN RIDGE DRIVE

LEWI NEWARK JOAN CE_TE
605 AUTUMN RIDGE DRIVE

LEE KAM BOR A SYLVIA CHIEN-MEI
504 AUTUMN RIDGE DRIVE

JOHN&CONSTANCE KERO_IRREV TRUST 507 AUTUMN RIDGE DRIVE

F DIEMERT JEAN F V
408 AUTUMN RIDGE DRIVE

SULLIVAN CATHERINE A
806 AUTUMN RIDGE DRIVE

CAN KING DANA -TR_TR
503 AUTUMN RIDGE DRIVE

MORANO ALFRED O
402 AUTUMN RIDGE DRIVE

ELIADES DAVID J
0 OLD GROTON ROAD

CARRIGER CHRISTINE E_TR
301 AUTUMN RIDGE DRIVE

MARION JOHN M_TE REY GERTR CANNEY PATRICIA WOODS L/E
205 AUTUMN RIDGE DRIVE UMN RIDGI 307 AUTUMN RIDGE DRIVE

LIND KENNETH J -TE RANK
302 AUTUMN RIDGE DRIVE 3E DRIVE

STEADMAN DIANNE -TE
305 AUTUMN RIDGE DRIVE

H CORR MARGARET L/E
502 AUTUMN RIDGE DRIVE

JOSEPH JOI SINCLAIR ROBERT_TE
106 AUTU 401 AUTUMN RIDGE DRIVE

RUGDE LEKHA R T_TR
506 AUTUMN RIDGE DRIVE

GLASZCZ JOANNE K NNIE G -JT
308 AUTUMN RIDGE DRIVE 3E DRIVE

MUGFORD TOFANELLI MARILYN E
201 AUTU 306 AUTUMN RIDGE DRIVE

MAHON PATRICIA A LIAGHAN FRANCIS X
604 AUTUMN RIDGE DRIVE UMN RIDGE DRIVE

W-GAR-15

W-JMT-2

W-GAR-16

W-GAR-14

W-GAR-13

LINE 343

310 311 312 313 314 315 316

PH 2043

AYER

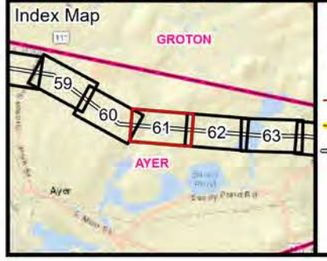
EH 1306

AYER GUN & SPORTSMANS CLUB 0 SNAKE HILL ROAD

TOWN OF AYER
0 GROTON HARVARD ROAD

SNAKE HILL ROAD

Index Map




- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- NHESP CERTIFIED VERNAL POOL
- 100' BUFFER ZONE
- 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

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

MOORE CALVIN E ETR
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

AYER

W-GAR-12

W-GAR-11

W-GAR-10

316

317

318

319

320

321

LINE 343

V-GAR-16

W-GAR-11

V-GAR-13

W-GAR-10

W-GAR-9

AYER GUN & SPORTSMANS CLUB 0 SNAKE HILL ROAD

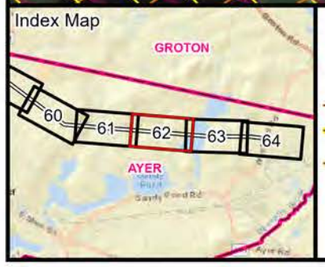
PH 2043

EH 1306

TOWN OF AYER
0 WRIGHT ROAD

LINDLEY DRIVE

Index Map




- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 343
- TIMBER MATTING
- WORKPAD
- CULVERT
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- 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

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

EH 1306
PH 2043
W-GAR-9
W-GAR-9
EH 1306
PH 2043
AYER
LINE 343
S-GAR-7
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ORCHID LANE
SUNFLOWER
TURTLE HILL ROAD
LOON HILL ROAD
ROSE LANE
IRIS AVENUE
HIBISCUS LANE
WINTERBERRY LANE
MULBERRY CIRCLE
MAGNOLIA DRIVE
LINDLEY DRIVE
JEFFORDS THEODORE M - TE 2 TURTLE HILL ROAD #B
DAY MOLLY 3 TURTLE HILL ROAD #B
BROUGHTON RUTH E - TR 16 TURTLE HILL ROAD #A
WILCOX KENNETH J - TE 16 HIBISCUS LANE
SHARKEY PAUL J 15 HIBISCUS LANE
FOX MEADOW REALTY CORP 0 STRATTON HILL ROAD
OWNER UNKNOWN 0 SNAKE HILL ROAD
LY ANH QUOC - TE 14 HIBISCUS LANE
BUTTRICK KATHRYN L - TR 12 HIBISCUS LANE
EMMONS JEFFERY L 12 TURTLE HILL ROAD #B
FLINT LINNEA S TRUST 4 TURTLE HILL ROAD #B
MCLAUGHLIN PETER C & DEBORAH - TR 11 TURTLE HILL ROAD #B
LANDERS ELIZABETH R 6 TURTLE HILL ROAD #A
WHITCOMB RYAN CHANDLE 14 TURTLE HILL ROAD #A
ADELMAN MERI ZIDE JULIE 6 TURTLE HIL8 TURTLE HILL ROAD #A
SUSI ALAN F 16 TURTLE HILL ROAD #A
HALL DEBRA LON SUSANNE M 7 TURTLE HILL ROAD #B HILL ROAD #A
SNIEGOSKI ROBERT J 16 TURTLE HILL ROAD #B
DOLAN KATHLEEN R - TR MAYANK 1 TURTLE HILL ROAD #B HILL ROAD #B
SULLIVAN ELAINE M - TE 14 TURTLE HILL ROAD #B
LIU YUJING 9 TURTLE HILL ROAD #A
MASUDI SALOME H 4 TURTLE HILL ROAD #A
TITI GERAHRAHMAN PATRICIA 5 TURTLE HIL11 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
BOISSEAU LAWRENCE J - TE 11 HIBISCUS LANE
SHUGERT PETER H 5 TURTLE HILL ROAD #A
TRAVAGLINI SANDISON MARILYN L 1 TURTLE HIL9 TURTLE HILL ROAD #B
TOWN OF AYER 0 WRIGHT ROAD

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AYER
LITTLETON

- REPLACE STRUCTURE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE STRUCUTRE & SHIELDWIRE (PHASE 2)
- REPLACE STRUCTURE (PHASE 1); REPLACE SHIELDWIRE (PHASE 2)
- TYPE R ROAD
- TYPE S ROAD
- LINE 343
- TIMBER MATTING
- WORKPAD
- 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

N
1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

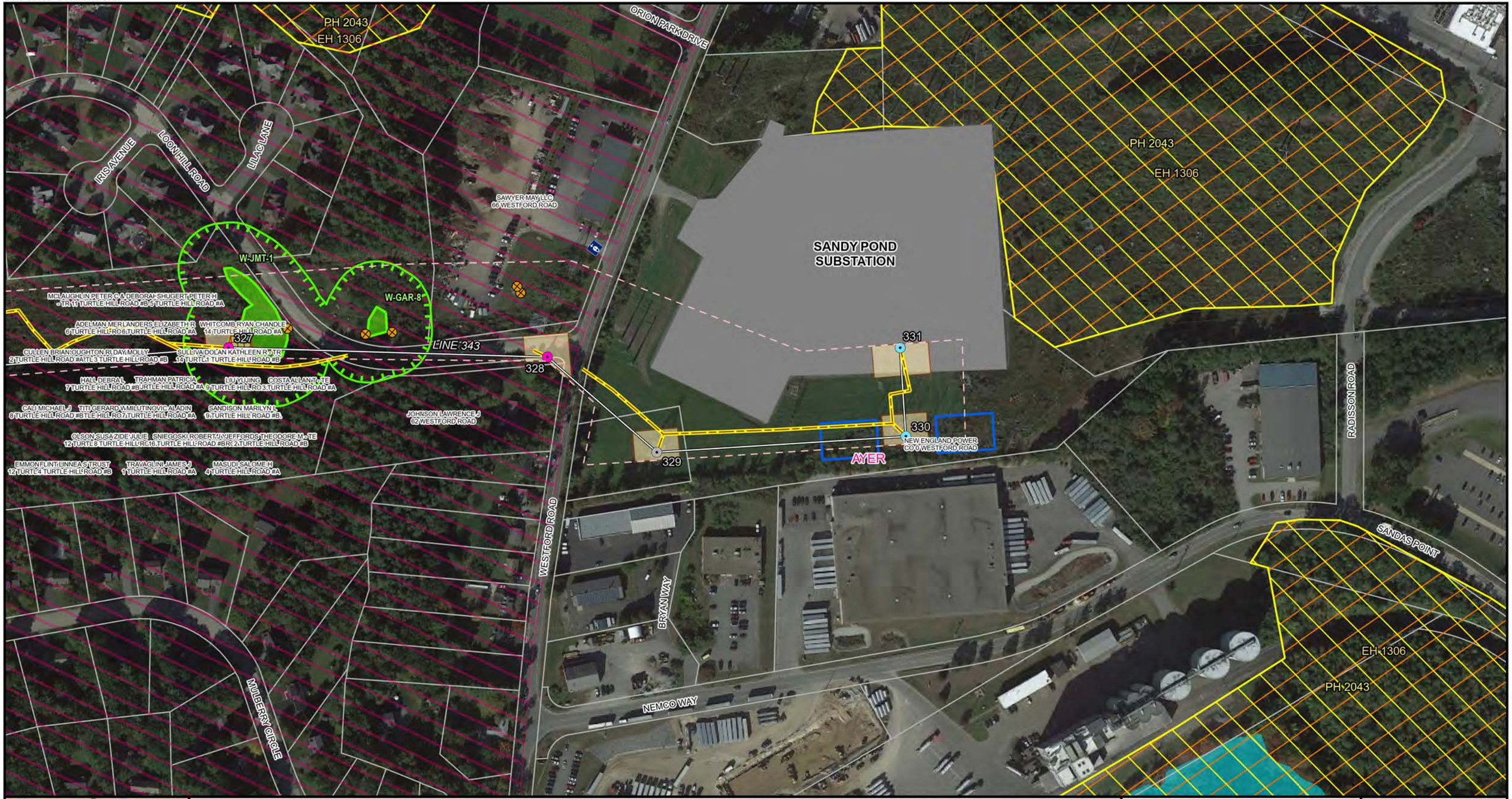
**AYER, MA**



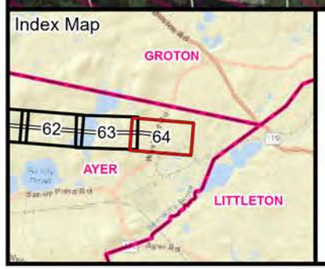
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC




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)
- TYPE S ROAD
- LINE 343
- PULL PAD
- TIMBER MATTING
- WORKPAD
- CULVERT
- 100' BUFFER ZONE
- 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

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



- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE R ROAD
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- P142S
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- INTERMITTENT STREAM (DEP 25K)
- MADEP WETLAND (2005)*
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- APPROXIMATE EDGE OF ROW
- PARCEL 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



- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- P142S
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- INTERMITTENT STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- APPROXIMATE EDGE OF ROW
- PARCEL 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

SHREWSBURY
PH 1133
PH 1133
DAVIS WAY
LAKE AVENUE
OAKBEACH TERRACE
SUNTAUG ROAD
BAY EDGE DRIVE
BAY EDGE LANE
WHITLA DRIVE
CADMAN STREET
BILLOW STREET
VIGS WAY
WORCESTER
SMITH,SIMON N +JENNIFER E 412 LAKE AVE
AULIZIO,ROBERT J +GAYLE P 410 LAKE AVE
BISHOP,LUCILENE P 408 LAKE AVE
SOME TREE CLEARING MAY BE REQUIRED
SOME TREE CLEARING MAY BE REQUIRED
SETZCO,GEORGE D 468 LAKE AVE
NEJAIMEY,RICHARD J 472 LAKE AVE
CONKLIN,JOHN 476 LAKE AVE
BOUCHER,JOSEPH J +BRENDA 480 LAKE AVE
MCGRATH,DOUGLAS HYDE 482 LAKE AVE
HOLLEY,SHAKISHA C +ACEAMPONG,KOFI A 484 LAKE AVE
QUATELA,DAVID A +486 LAKE AVE
MURPHY,EVAN,WILLIAM + JOCELYN LEE 10 CADMAN ST
DELROSSO,STEVEN L + GAIL 12 BILLOW ST
CSX TRANSPORTATION INC 00 I290
EIP ATLAS STREET LLC 66 ATLAS ST
SERVICE PLUS DISPOSAL INC 18 ATLAS ST
HICKEY,JAMES +,BELLA 12 ATLAS ST
MATTERO,ANTHONY 16 ATLAS ST
CSX TRANSPORTATION INC 487 SUNDERLAND RD
P142S
26
25
24
23
22
21
20
19
PH 1145
WORCESTER CONSERVATION COMMISSION 55 JOLMA RD
ONSET STREET
PINE HILL ROAD
PORTER STREET
WABAN AVENUE
LOCKWAY STREET
POCASSET STREET
ATLAS STREET
SUNDERLAND ROAD
RURAL STREET
WESTDALE STREET
UTAH STREET
DULUTH STREET
DANVERS STREET
BRUCE S

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SHREWSBURY
WORCESTER
MILLBURY

- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- P142S
- PULL PAD
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 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

N

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WORCESTER & SHREWSBURY, MA**

Page 67 of 79

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

Base Map: Google Imagery

nationalgrid
TRC


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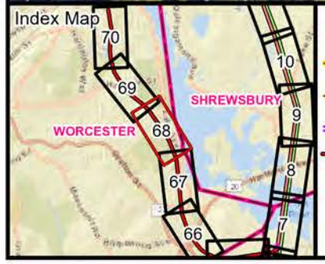


- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- P142S
- PULL PAD
- WORKPAD
- NHESP CERTIFIED VERNAL POOL
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- NHESP PRIORITY HABITAT - 2021
- NHESP ESTIMATED HABITAT - 2021
- SPECIAL FLOOD HAZARD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

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WORCESTER & SHREWSBURY, MA**

Page 68 of 79

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

Base Map: Google Imagery

nationalgrid TRC

PH 1145
TOURAINE STREET
PALISADES STREET
WOODROW STREET
DALLAS STREET
WORCESTER CONSERVATION COMMISS 0 EMPIRE ST
PH 1145
COBURN AVENUE
WALK-IN ONLY
41
CSX TRANSPORTATION INC 00 I290
40
39
38
37
36
35
34
RIGGIERI WILLIAM J 23 HAZEL ST
WORCESTER NATURAL HISTORY SOCI 222 HARRINGTON WAY
GABRIELE, ROYA - GAEHEARN JOSEPH P LLC 437 HAMILTON ST # F
A-D HAMILTON ST
ELTON STREET
HAZEL STREET
BOSTON AVENUE
CRAWFORD STREET
BIRD STREET
MODOC STREET
NANTASTREET
ORTON STREET EXTENSION
HURTLE AVENU
RALPH AVENUE
BROOKDALE STREET
MIDDLESEX AVENUE
COMMONWEALTH AVENUE
JONATHAN

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SHREWSBURY
WORCESTER

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

ALVARADO AVENUE
LAKE VIEW STREET
ANNA STREET
LOCUST AVENUE
MINK CIRCLE
DALLAS STREET
CAPRON STREET
EASTVIEW APARTMENTS ASSOCIATES 50 FRANK ST
WORCESTER CONSERVATION COMMISS 0 EMPIRE ST
WORCESTER CONSERVATION COMMISSION 88 ANNA ST
WALK-IN ONLY
NEW ENGLAND POWER COMPANY 0029 WIGWAM AVE
LOOMINGDALE SUBSTATION
FRANK STREET
46
47
48
45
44
43
42
41
GRINNELL EDGAR G + COLI ZENAID NIHAYA F CIR
KOZLOWSKI ROSANNE + MICHAEL H 6 PAP 2 PAPAGNI CIR
SIMON MICHAEL
0000 NORTHBORO ST
PAPAGNI CIRCLE
APOSTOLIC CHURCH BOSTON ASSEMBLY 0 HARRINGTON WAY
PH 1145
RANSPORTATION INC 00 I290
CHRISTINE DRIVE
POLLOCK STREET
NORTHBORO STREET
MARLBORO STREET
FRANKLIN STREET
ANGELA ROSE LANE
WORCESTER NATURAL HISTORY SOCI 222 HARRINGTON WAY
BIGELOW LANE

Index Map


- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- P142S
- PULL PAD
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- INTERMITTENT STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- NHESP PRIORITY HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL 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

BRYANT STREET
BREMER STREET
HEMANS STREET
WILLIS STREET
DALY STREET
EDGEWORTH STREET
PRIOULX STREET
WHITTIER 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 I190
HD DEVELOPMENT OF MARYLAND INC 130 GOLD STAR BLVD
WORCESTER
BYRON STREET
NASHUA STREET SUBSTATION
NEW ENGLAND POWER COMPANY 25 BYRON ST
BOSTON + MAINE RAILROAD CO 28 GARDEN ST
WORCESTER BUSINESS CENTER LLC 67 MILLBROOK 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
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O141
O141S

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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
APPROXIMATE EDGE OF ROW
PARCEL BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

# LINE 313/343 & O141/P142

**FIGURE 2**
**ACCESS PLANS**

**WORCESTER, MA**

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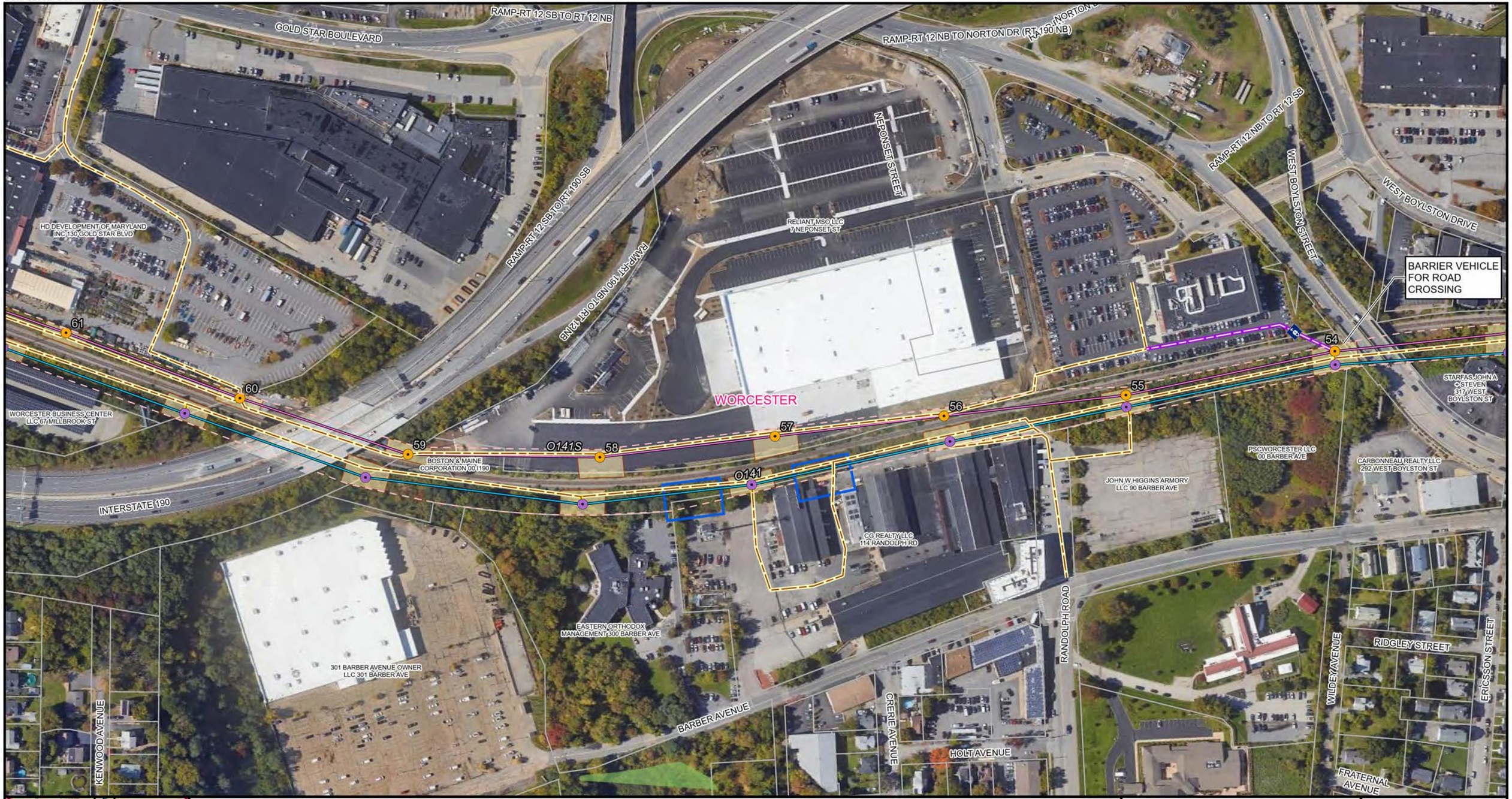
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC





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
MADEP WETLAND (2005)*
APPROXIMATE EDGE OF ROW
PARCEL BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WORCESTER, MA**

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

Base Map: Google Imagery

nationalgrid
TRC

B STREET
NEW BOND STREET
SAINT-GOBAIN ABRASIVES INC 1 NEW BOND ST
ABBY KELLEY FOSTER CHARTER PUBLIC SCHOOL 2 NEW BOND ST
NEW BOND LLC 3 NEW BOND ST
SERVICE ROAD
STORES STREET
PROVIDENCE & WORCESTER RAILROAD CO 00 I290
WEST BOYLSTON DRIVE
BOSTON + MAINE RAILROAD CO 150 WEST BOYLSTON DR
BOSTON + MAINE CORPORATION 00 I190
CITY OF WORCESTER CITY MANAGER 329 WEST BOYLSTON ST
WEST BOYLSTON STREET
51
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50
49
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47
46
45
53
54
55
BARRIER VEHICLE FOR ROAD CROSSING
ZOTTOLI LOUISE 321 WEST BOYLSTON ST
STARFAS JOHN A + STEVEN 317 WEST BOYLSTON ST
ROCKDALE BROOKS L
BROOKS ST
GOSNOLD STREET
ERICSSON STREET EXTENSION
ANDOVER STREET
KING PHILIP ROAD
WHITMARSH AVENUE
SUMMERHILL AVENUE
KENDRICK AVENUE
AIRLIE STREET
GREENDALE AVENUE
CARBONNEAU REALTY LLC 292 WEST BOYLSTON ST
WORCESTER LLC 3 BARBER AVE
BARBER AVENUE
BOURNE STREET
WATSON AVENUE
ERICSSON STREET
WILDEY AVENUE
RIDGLEY STREET
LEEDS STREET

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
- PERENNIAL STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- 200' PERENNIAL RIVERFRONT AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

N

1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

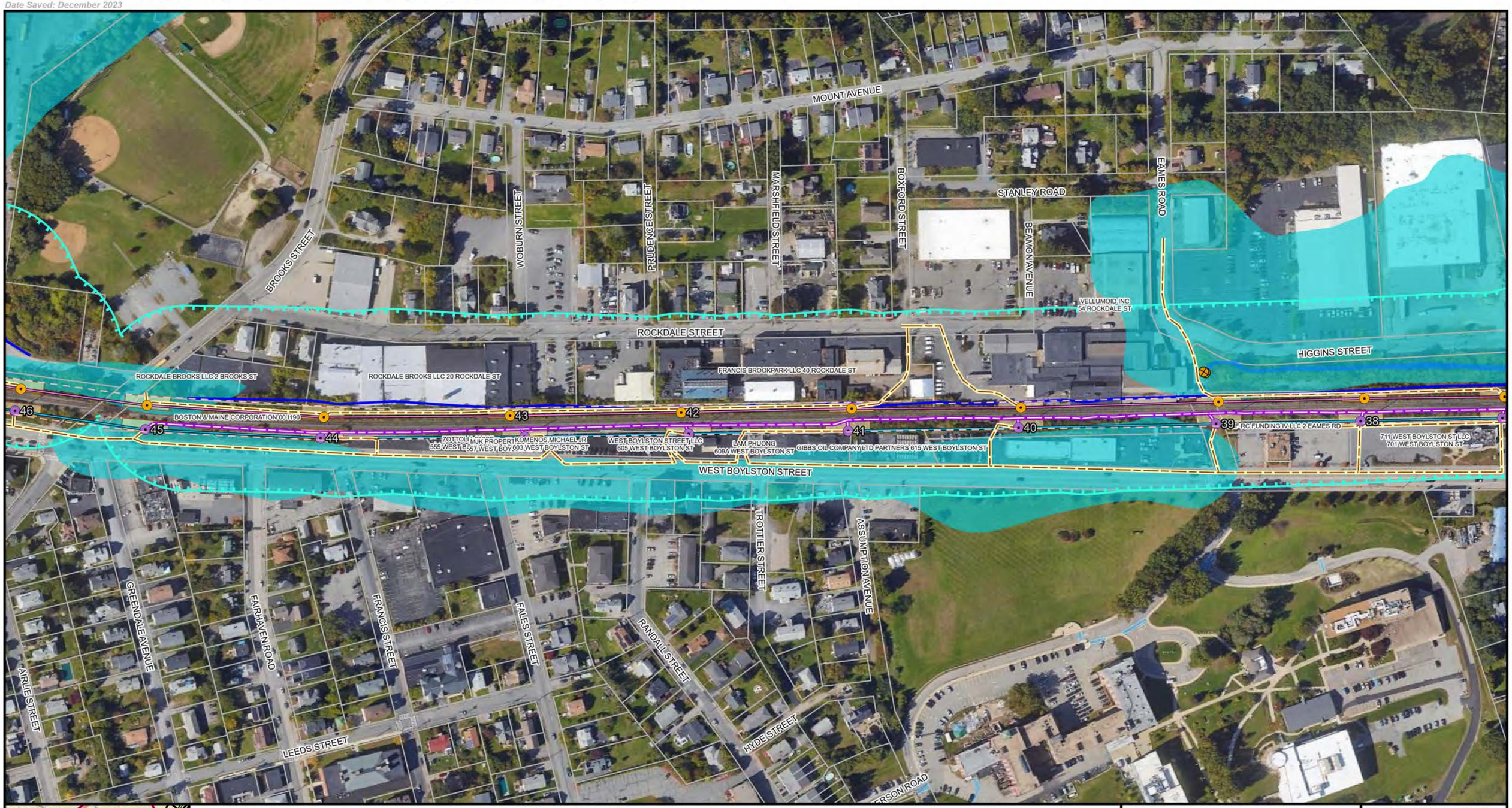
**WORCESTER, MA**

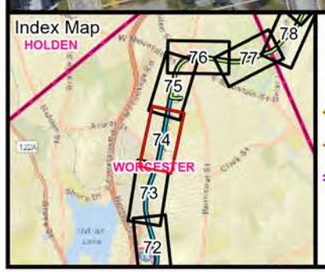


Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid
TRC




- REPLACE INSULATORS (LINE O141/P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- O141
- O141S
- WORKPAD
- CULVERT
- PERENNIAL STREAM (DEP 25K)
- DELINEATED SURFACE WATER
- 200' PERENNIAL RIVERFRONT AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL 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
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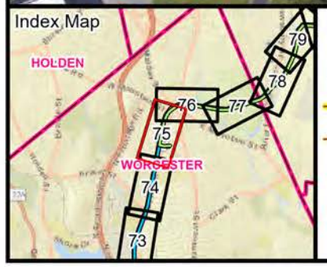



- REPLACE INSULATORS (LINE O141/ P142)
- REPLACE SHIELDWIRE AND INSULATORS (LINE O141/P142)
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- ALTERNATE
- O141
- O141S
- O141W
- PULL PAD
- WORKPAD
- PERENNIAL STREAM (DEP 25K)
- MADEP SURFACE WATER*
- MADEP WETLAND (2005)*
- DELINEATED SURFACE WATER
- 200' PERENNIAL RIVERFRONT AREA
- SPECIAL FLOOD HAZARD AREA (1-PERCENT ANNUAL CHANCE FLOOD OR 100-YEAR FLOOD - FEMA)
- APPROXIMATE EDGE OF ROW
- PARCEL 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

CHAMBERS STREET
MALDEN STREET
REYNOLDS STREET
MALDEN TERRACE
HUNNEWELL ROAD
RADCLIFFE STREET
MALDEN STREET CONNECTOR
BURNCOAT STREET
PROKO,HENRY,S
583 BURNCOAT ST
WORCESTER COUNTRY CLUB 1 RICE ST
BOSTON & MAINE CORPORATION 00 I190
COMM OF MASS HIGHWAY DEPT 1 MALDEN ST
880 WEST BOYLSTON STREET,LLC 880 WEST BOYLSTON ST
PROKO REALTY,INC
15 MOUNTAIN ST EAST
WIK INVESTMENTS LLC
27 MOUNTAIN ST,WE
MAYO FAMILY REAL ESTATE HOLDINGS LLC 859 WEST BOYLSTON ST
AHMAD SARFRAZ
857 WEST BOYLSTON ST
853 INVESTMENTS LLC
853 WEST BOYLSTON ST
SUMMIT REALTY OF WORCESTER INC 61 MOUNTAIN ST WEST
G O V REALTY CORP
849 WEST BOYLSTON ST
G O V REALTY CORP
837 WEST BOYLSTON ST
829 WEST BOYLSTON STREET LLC 829 WEST BOYLSTON ST
WORCESTER POLICE DEPARTMENT
REALTY LLC 61A MOUNTAIN ST WEST
REALTY LLC 30 PULLMAN ST
TRIANGLE STREET
VENDORA ROAD
HASTINGS ROAD
MOUNTAIN STREET EAST
COLLINS STREET
DOYLE STREET
WORCESTER MOUNTAIN STREET,LLC 29 MOUNTAIN ST EAST
23
24
25
26
27
28
29
30
31

Index Map
HOLDEN
WORCESTER
74
75
76
77
78
79
20

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

N
1 inch = 200 Feet
0 100 200
Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WORCESTER, MA**

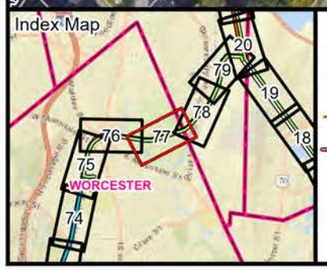
Page 76 of 79

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

Base Map: Google Imagery

nationalgrid
TRC


Index Map




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

N

1 inch = 200 Feet

0 100 200

Feet

**LINE 313/343 & O141/P142**

**FIGURE 2**
**ACCESS PLANS**

**WORCESTER & WEST BOYLSTON, MA**



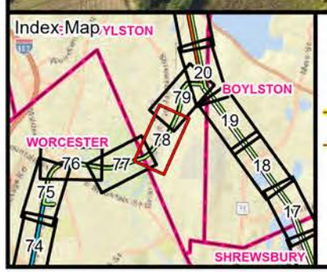
Data Source: ESRI, Google, MA DEP, Mass GIS, NGRID, TRC

Base Map: Google Imagery

nationalgrid TRC

BOSTON & MAINE CORPORATION
00
I190
WORCESTER COUNTRY CLUB 1 RICE ST
WORCESTER COUNTRY CLUB SHREWSBURY STREET
ANGELL BROOK DRIVE
BOSTON & MAINE RAILROAD SHREWSBURY STREET
WORCESTER
SHREWSBURY STREET
WEST BOYLSTON
WEST BOYLSTON TOWN OF 225 SHREWSBURY STREET
WORCESTER COUNTY SHERIFF DEPARTMENT 5 PAUL X TIVNAN DRIVE
PAUL X TIVNAN DRIVE
WEST BOYLSTON TOWN OF PAUL X TIVNAN DRIVE
O141S
O141W
W-MBF-26
S-MBF-2
18
17
16
15
14
13
12
11
10
9

Index Map




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

N

1 inch = 200 Feet
0 100 200
Feet

# LINE 313/343 & O141/P142

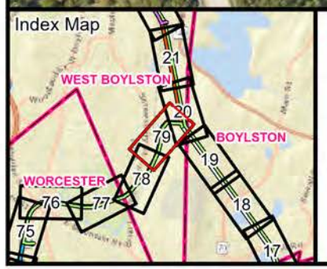
## FIGURE 2
## ACCESS PLANS

## WORCESTER & WEST BOYLSTON, MA

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

Base Map: Google Imagery

nationalgrid
TRC


- 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)
- TYPE S ROAD
- PREFERRED ACCESS-NO IMPROVEMENTS
- LINE 313
- O141S
- O141S/P142
- O141W
- O142/O141W
- PULL PAD
- WORKPAD
- NHESP POTENTIAL VERNAL POOL
- 100' BUFFER ZONE
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED WETLAND
- 200' PERENNIAL RIVERFRONT AREA
- OUTSTANDING RESOURCE WATERS*
- NHESP PRIORITY HABITAT - 2021
- APPROXIMATE EDGE OF ROW
- PARCEL BOUNDARY

1 inch = 200 Feet
0 100 200
Feet

# LINE 313/343 & O141/P142

**FIGURE 2**
**ACCESS PLANS**

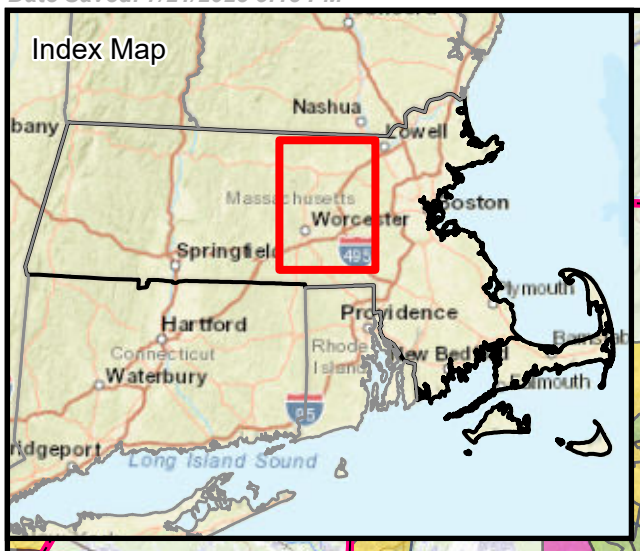
**BOYLSTON & WEST BOYLSTON, MA**



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

Base Map: Google Imagery

nationalgrid
TRC




TOWNSEND
PEPPERELL
DUNSTABLE
TYNGSBOROUGH
GROTON
LUNENBURG
SHIRLEY
WESTFORD
AYER
WESTMINSTER
LITTLETON
LEOMINSTER
HARVARD
LINE 343
BOXBOROUGH
ACTON
LANCASTER
PRINCETON
STERLING
CONCORD
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

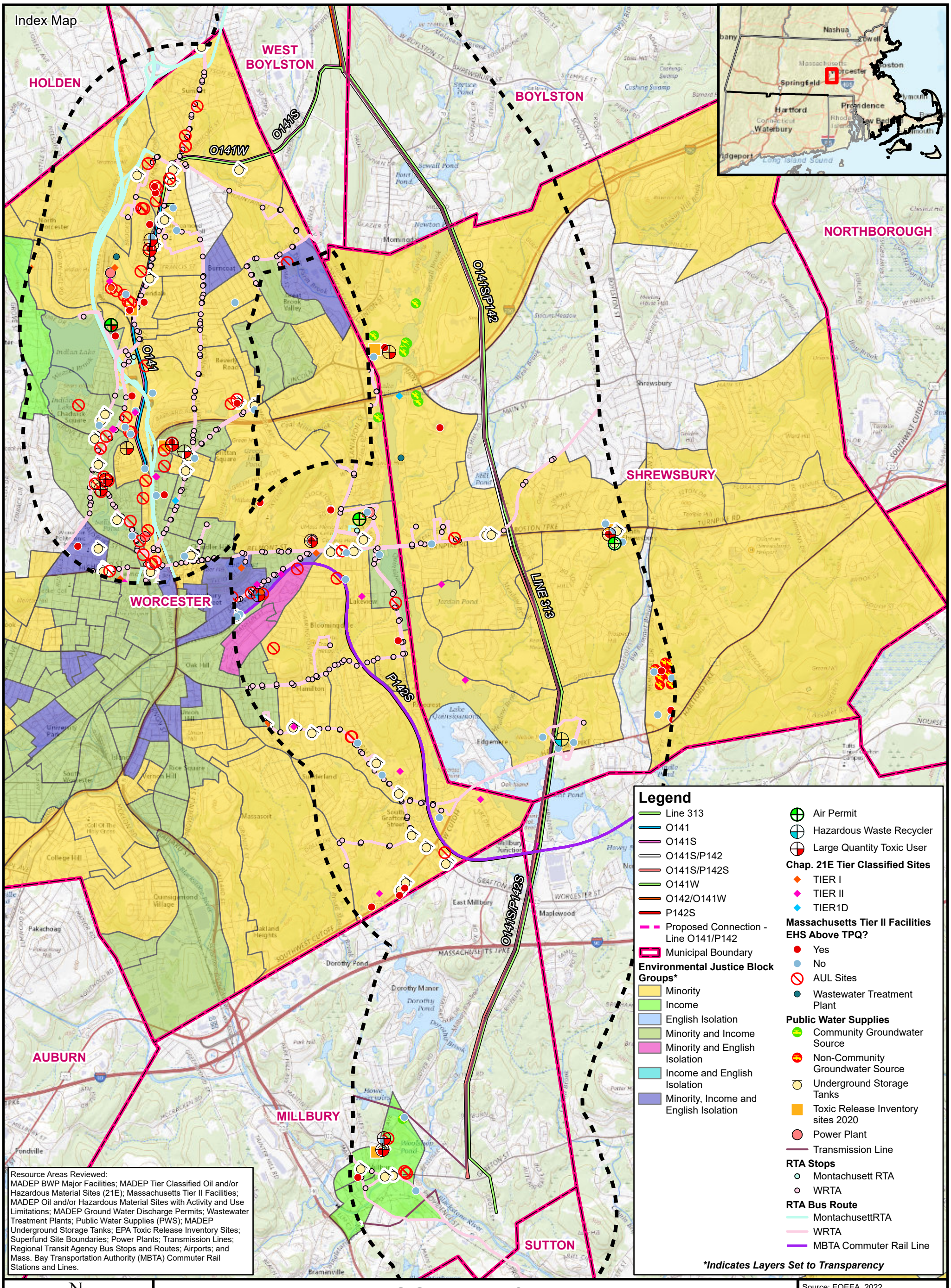
Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Worcester, Shrewsbury, Millbury, MA

Figure 3

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




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

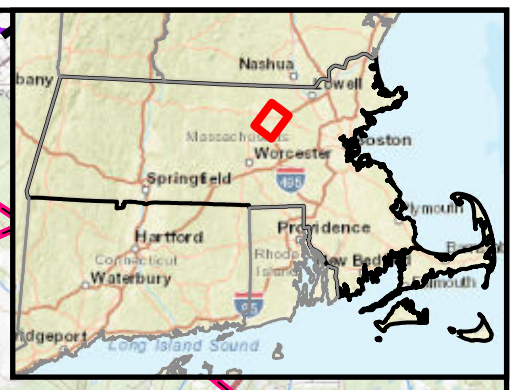
Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Worcester, Shrewsbury, Millbury, MA

Figure 4
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 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 Dataset, and National Transportation Dataset; USGS Global Ecosystems;

nationalgrid
TRC

# Appendix B: Photographic Log

# APPENDIX B
# PHOTOGRAPHIC LOG
EENF Filing

| | | |
|---|---|---|
| **Client Name:** New England Power Company d/b/a National Grid | **Site Location:**<br>Millbury, Grafton, Worcester, Shrewsbury, Boylston, West Boylston, Sterling, Clinton, Lancaster, Shirley, Ayer, MA | **Project No.**<br>376699.0000.0000<br>400637.0000.0000 |

| | |
|---|---|
| **Photo No. 1.**<br>**Date:**<br>03/20/2023<br>**Description:**<br>Photo of typical current conditions of access roads along Line 313/343 and the P142/O141 lines. Access road improvements and permanent work pads will be constructed in these areas. |  |

| | |
|---|---|
| **Photo No. 2.**<br>**Date:**<br>03/20/2023<br>**Description:**<br>Photo of typical current conditions of access roads along Line 313/343 and the P142/O141 lines. Access road improvements and permanent work pads will be constructed in these areas. |  |

# APPENDIX B
# PHOTOGRAPHIC LOG
EENF Filing

| | | |
|---|---|---|
| **Client Name:** New England Power Company d/b/a National Grid | **Site Location:**<br>Millbury, Grafton, Worcester, Shrewsbury, Boylston, West Boylston, Sterling, Clinton, Lancaster, Shirley, Ayer, MA | **Project No.**<br>376699.0000.0000<br>400637.0000.0000 |

| | |
|---|---|
| **Photo No. 3.**<br>**Date:**<br>03/20/2023<br>**Description:**<br>Photo of typical current conditions of access roads along Line 313/343 and the P142/O141 lines. Access road improvements and permanent work pads will be constructed in these areas. |  |

# Appendix C: Transmission Line Engineering Document

# Transmission Line Access

## Table of Contents

## 1.0 General

1.1 This guideline describes the engineering and design process to assess and implement both temporary and permanent accessways from public ways to transmission rights-of-way and within right-of-way corridors on the National Grid system.

1.2 The development and installation of accessways is a multi-disciplinary effort. Close coordination between all project team members is critical to the successful development of an access network.

1.3 This guideline is intended to provide best practices and general guidance. There are instances where the designs presented herein will not align with the access needs along a right-of-way. In those instances, sound engineering judgement and in-depth coordination with the Environmental, Forestry, and Construction representatives associated with the project team is strongly encouraged

## 2.0 References

2.1 Gravel Roads – Construction & Maintenance Guide. US Department of Transportation. Federal Highway Administration (FHWA). August 2015

2.2 Vermont Better Backroads Manual

2.3 NYS DEC Bluebook and Design Manual

2.4 Vermont 2017 Stormwater Manual

2.5 Massachusetts Stormwater Handbook and Stormwater Standards

2.6 Rhode Island Stormwater Design and Installation Standards Manual

2.7 New Hampshire Stormwater Manual

## 3.0 Roles and Responsibilities

3.1 The development of access associated with a project is a multi-disciplinary effort that requires coordination between the entire project team. While the justification of need and preliminary development of the scope are performed in the early stages of a project (Stage 4.1 and 4.2), capturing the details associated with the scope of work is the responsibility of Transmission Engineering and shall be done so as a requirement associated with the completion of Stages 4.3 and 4.4A..

3.2 **Asset Management** – Responsible for ensuring high level scope, budget, and schedule are incorporated into the Stage 4.1 and 4.2 deliverables. Responsible for establishing Land and Building funding projects to support Stage 4.3, 4.4, and 4.5 engineering, design, construction, and as-built efforts.

3.3 **Construction (Civil)** – provide review of proposed engineering work product as part of the Stage 4.3 and 4.4A review process, provide construction supervision and coordination with Transmission Engineering and/or their designee to ensure the design presented in the Stage 4.4A documents is executed safely in Stage 4.4B, and provide timely as-built documentation (field mark-ups) in Stage 4.5.

3.4 **Construction Planning** – provide input regarding the alignment of access to suit the needs of a Project, guidance on the types of equipment that will be utilizing said access, and assisting in determining if access will be temporary or permanent in nature. Provide review of proposed engineering work product as part of the Stage 4.3 and 4.4A deliverable review process.

3.5 **Environmental** – provide support by identifying sensitive resources (wetlands, rare species, historical/archeological resources, etc.), identifying permitting impacts associated with access types and alignments, and guidance regarding overall layout of access.

3.6 **Project Developer** – responsible for ensuring accurate scope, schedule, and budget reporting during Stage 4.3 and facilitating project team communications.

3.7 **Project Manager** – responsible for ensuring accurate scope, schedule, and budget reporting during Stage 4.4 and 4.5 along with facilitating project team communications.

3.8 **Real Estate** – provide input regarding underlying land rights and identify potential need for supplemental or modified rights in Project right-of-way and for off right-of-way access. Should additional rights be necessary to construct and maintain access, Real Estate to provide guidance for the viability of obtaining such rights and support necessary acquisition.

3.9 **Transmission Engineering** – provide engineering support in the classification of access types as outlined herein, support field reviews, desktop reviews, and other coordination efforts to define access alignments, review proposed alignments to determine need for details above and beyond standard access types, provide drafting support along with developing Technical Scope Documents and Design Packages associated with permanent access to be utilized for the purposes of bidding and constructing access associated with Transmission Projects.

## 4.0 Access Classification Process

4.1 Classification requirements by project phase/step shall be defined as follows:

4.1.1 **Level 1 Classification** – preliminary development of access routes required to support the scope associated with a specific project alternative. This level of classification is to be used solely for budgetary estimates during Stage 4.2 and to provide a basis for approximate

amount of temporary access and permanent access to be used in defining the necessary schedule to support further development of access plans in Stage 4.3.

4.1.2 **Level 2 Classification** - to be accomplished once the location of access routes associated with a project has been generally defined. Level 2 classification requires defining temporary matting, modifications to existing access, and establishing new access. Assignment of Level 2 Classifications shall be the joint responsibility of Construction Planning, Environmental, and Transmission Engineering. This level of classification will allow for the bidding of engineering services associated with further development of access requirements.

4.1.3 **Level 3 Classification** – to be accomplished in association with further project development and the completion of the 4.3 Access Scope Document. Level 3 Classification requires definition of access types for permanent access and associated limits of disturbance. Locations where stormwater management features or mass grading plans would be necessary to support construction of permanent access shall be identified but not detailed as part of Level 3 Classification. Level 3 Classification shall be the responsibility of Transmission Engineering.

4.1.4 **Level 4 Classification** – to be accomplished in the detail design phase and provide sufficient detail for the safe, efficient, and economical construction of access. Level 4 Classification shall be the responsibility of Transmission Engineering.

4.1.5 **Level 5 Classification** – to be completed post construction and used as the basis for developing as-built documentation. All as-built documentation shall be captured in a Stage 4.5 Project Closeout Issue with native files provided to Transmission Asset Systems & Data for incorporation into National Grid's GIS System. Level 5 Classification shall be the responsibility of Transmission Engineering.

## 5.0 Access Types

5.1 National Grid has developed a standard nomenclature associated with the various types of access improvements to be implemented. The names used to describe the improvement of existing access or creation of new accessways are to be utilized consistently and in accordance with those definitions and descriptions presented herein. Ultimately, the type of access shall be decided upon by the Project Team with the objective of balancing cost, schedule, environmental impacts, abutter impacts, constructability, and maintenance considerations.

5.2 Temporary Matting

5.2.1 To be utilized to establish temporary access in environmentally sensitive areas, agricultural fields, lawns and in other areas where establishing permanent access is not practical.

5.3 Modifications to Existing Access

5.3.1 Modifications to existing access range from filling in small ruts in an existing accessway to restoration of large-scale washed out cart-paths. There are instances when modifying an existing access that has substantially deteriorated can become the equivalent of installing new access. In these instances, utilization of the access types defined in Section 5.c ”Installation of New Access” is recommended.

5.3.2 **Refresh Existing (Type R)** – this modification consists of capping an existing stable sub-base that does not have the potential to blend during placement of fill. Installation or restoration of stormwater management features shall be completed as appropriate. Should fill be imported for reshaping during the access refreshing process, the installation of a crown of ½” to ¾” per foot of width of access is strongly recommended. Depending on site conditions, the use of native soils or Access Base Aggregate is generally sufficient to address minor erosion and shaping needs associated with refreshing an existing access. Addressing larger erosion issues while refreshing an existing access may require creating drainage features, the use of course aggregate or boulders, and other methods and should be reviewed with the Project Engineer on a site by site basis.

5.3.3 **Widen and Refresh Existing (Type S)** - this modification consists of restorative widening and capping an existing stable sub-base that does not have the potential to blend during placement of fill. Reinforced shoulders shall be incorporated into the access as part of the widening process and a crown of ½” to ¾” per foot of width of the access is strongly recommended. Installation or restoration of stormwater management features shall be completed as appropriate. Depending on site conditions, the use of native soils or Access Base Aggregate is generally sufficient to address minor erosion and shaping needs associated with refreshing an existing access. Addressing larger erosion issues while refreshing an existing access may require creating drainage features, the use of course aggregate or boulders, and other methods and should be reviewed with the Project Engineer on a site by site basis.

5.3.4 **Restore Existing** – this modification consists of re-establishing eroded or infrequently utilized access and shall be executed to the standards as defined in “Installation of New Access”. These restoration activities will

generally consist of regrading and smoothing of existing alignments along with importing stable, well-drained materials to fill ruts, along with capping the final width of access, installing shoulders, and crowning the access at ½" to ¾" per foot of width. Depending on existing conditions, re-establishing or creating drainage features may be advisable to prevent future issues and reduce the need for additional maintenance.

5.4 Installation of New Access

5.4.1 The objective associated with the installation of permanent access is to provide a network of access to allow for the construction and maintenance of rights-of-way and electric transmission assets that is durably constructed and can be maintained in a cost-effective manner.

5.4.2 Primary considerations in the development of permanent access are providing a stable, maintainable access surface, managing stormwater such that it is diverted to the edges of the access and not along the surface of the access itself, creating a stormwater management system in line with local, state, and federal best management practices, and in a manner that considers environmental, cultural, and historical impacts.

5.4.3 **Gravel Access** – for use on stable subgrades with an aggregate cap for grades up to two percent grade and without an aggregate cap for grades over two percent.

a. Type 1 – Cap Existing Stable Sub-Base (SP.06.01.309.001)

b. Type 2 – Native Soil Base – Level Grade (SP.06.01.309.001)

c. Type 3 – Cut/Fill Side Slope Condition (SP.06.01.309.002)

d. Type 4 – Shallow Road Cut (0'-4') (SP.06.01.309.002)

e. Type 5 - Areas designated as "Gravel Access" with grades five percent or greater shall be detailed to suit site conditions and incorporate the appropriate permanent stormwater management features.

f. Maximum percent grade shall be limited, to the greatest extent practicable to 12%. Grades exceeding 12% shall require the approval of the Director of Transmission Engineering and Transmission Line Services to ensure the appropriate design and safety considerations are incorporated for the specific access location.

1. Temporary construction of access for grades greater than 25% may be necessary in select locations. It is advised that such locations be engineered out of scope or be designated for specialized equipment designed to traverse such grades

and restored post construction to minimize potential future maintenance costs and safety risks. Should such locations be impractical to restore, access shall be restricted and notice of hazard posted.

5.4.4 **Geogrid Access** – for use on unstable or organic soils with a subgrade California Bearing Ratio (CBR) of not less than 3.5%. No aggregate cap to be utilized regardless of grade. In those areas with subgrades with less than 3.5% CBR, the use of timber matting is generally recommended. Otherwise, these locations should be treated as Type 5 access requiring additional design and detailing. Type 1 Geogrid Access is intentionally omitted from this specification. Utilize Type 1 Gravel Access for capping access over an existing stable base.

a. Type 2 – Native Soil Base – Level Grade (SP.06.01.309.003)

b. Type 3 – Cut/Fill Side Slope Condition (SP.06.01.309.003)

c. Type 4 – Shallow Road Cut (0'-4') (SP.06.01.309.004)

d. Type 5 - For grades greater than 5% - detailed review is required for permanent access to determine if this is the most prudent course of action. Making grade modifications in areas with existing unstable subgrades will require geotechnical review to ensure stability during and post-construction.

e. Maximum percent grade shall be limited, to the greatest extent practicable to 12%. Grades exceeding 12% shall require the approval of the Director of Transmission Engineering and Transmission Line Services to ensure the appropriate design and safety considerations are incorporated for the specific access location.

1. Temporary construction of access for grades greater than 25% may be necessary in select locations. It is advised that such locations be engineered out of scope or be designated for specialized equipment designed to traverse such grades and restored post construction to minimize potential future maintenance costs and safety risks. Should such locations be impractical to restore, access shall be restricted and notice of hazard posted.

5.4.5 **Permeable Access** – for use in those locations where the stormwater discharge values associated with installing either a gravel access or geogrid access would require extensive stormwater management systems or require the acquisition of additional right-of-way. Permeable access is used to reduce calculated project runoff numbers or at the

bases of slopes to form a catchment as part of the stormwater management system. Permeable access shall be installed per SP.06.01.309 and SP.06.01.309.005 unless site conditions create the need for modification. In those instances, detailed design consistent with the practices to develop Type 5 access shall be utilized.

5.4.6 **Grass Pavers** – for use in lawn or other visually sensitive areas where permanent access needs to be established or to reduce stormwater discharge numbers depending upon jurisdiction. Grass paver access shall be installed per SP.06.01.309 and SP.06.01.309.006 unless site conditions create the need for modification. In those instances, detailed design consistent with the practices to develop Type 5 access shall be utilized.

5.4.7 **Restoration of New Access** – In instances where the installation of permanent stormwater management systems creates an undue maintenance burden, or the installation of permanent access is undesirable, gravel access may be decompacted, topsoiled, and seeded post construction. Final compaction requirements to achieve a restored condition shall align with requirements outlined by the jurisdictional permitting agency.

## Revision History

| Version | Date | Revision | Author | Reviewer | Approver |
|---|---|---|---|---|---|
| 1.0 | 08/23/2021 | Initial Issue | Jessica Farrell | Pauline Bassil | Nicole Maglione (Nims) |

# Appendix D: EG303NE

**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.

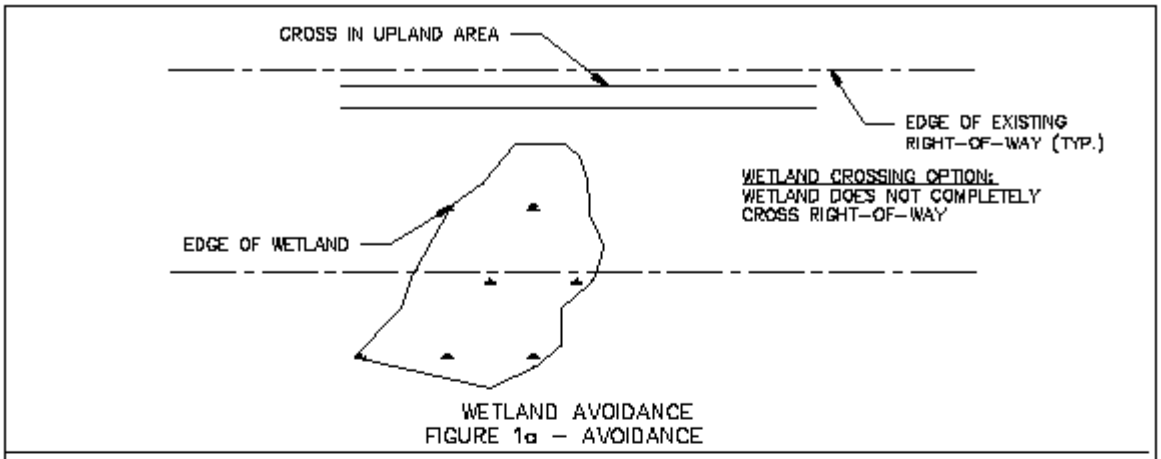
All new construction and maintenance projects shall follow clear and enforceable environmental performance standards, which is the purpose for which these BMPs have been compiled.

### 1.1 Avoidance and Minimization

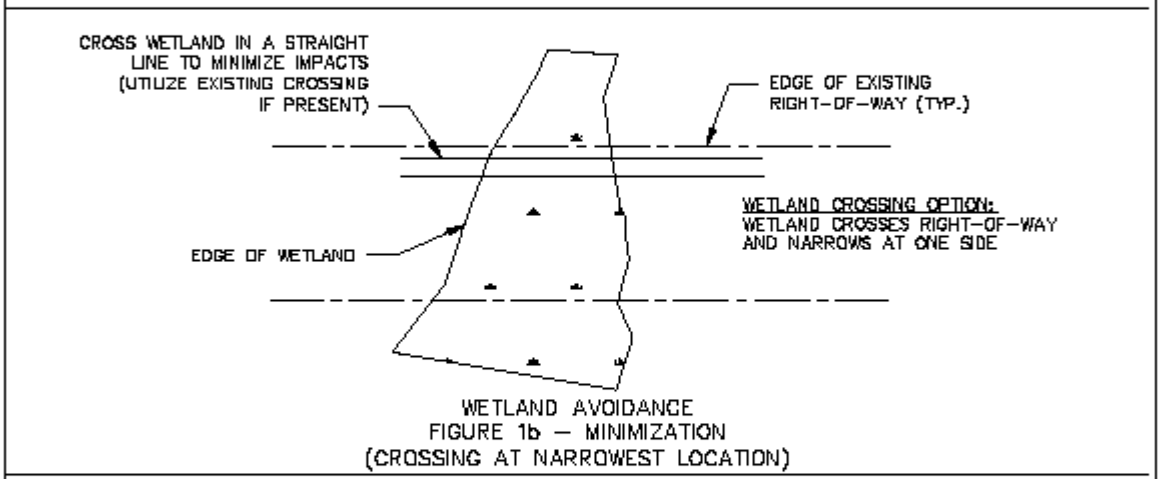
Measures shall always be taken to avoid impacts to wetlands, waterways, rare species habitats, known below and above ground historical/archeological resources and other environmentally sensitive areas. If avoidance is not possible, then measures shall be taken to minimize the extent of impacts. Alternate 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.

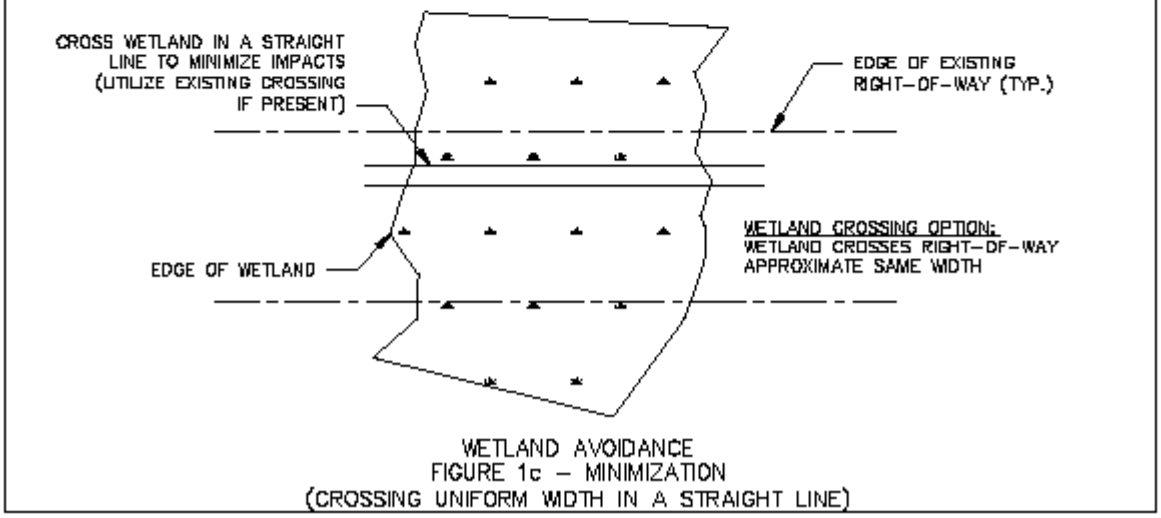
- Avoid and minimize stream crossings.
- Minimize the width of typical access roads through wetlands to a maximum width of 16 feet.
- Conduct work manually (without using motorized equipment) in wetlands, wherever possible.
- Use construction mats in wetlands to minimize soil disturbance and rutting 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<br>Shorelines of Ponds/Lakes<br>Wetlands<br>Floodplains | When located in a mapped flood area (A).<br>When mapped 100-year flood elevations (AE) are greater than 2 ft above existing grades.<br>Where past flash flood events have occurred.<br>Where steep terrain is present or surrounds the project location.<br>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.<br>When mats will be in place during a moon tide cycle.<br>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:*<br>Equipment operated within wetlands shall:<br>a) Have low ground pressure;<br>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<br>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:*<br>Equipment operated within wetlands shall:<br>a) Have low ground pressure;<br>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<br>c) Be operated on frozen wetlands. | 4 psi | NH General Permit, General Condition 17 |
| VT | *One of the following must apply:*<br>Equipment operated within wetlands shall:<br>a) Have low ground pressure;<br>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<br>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.<br>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:*<br>Equipment operated within wetlands shall:<br>a) Have low ground pressure;<br>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<br>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**

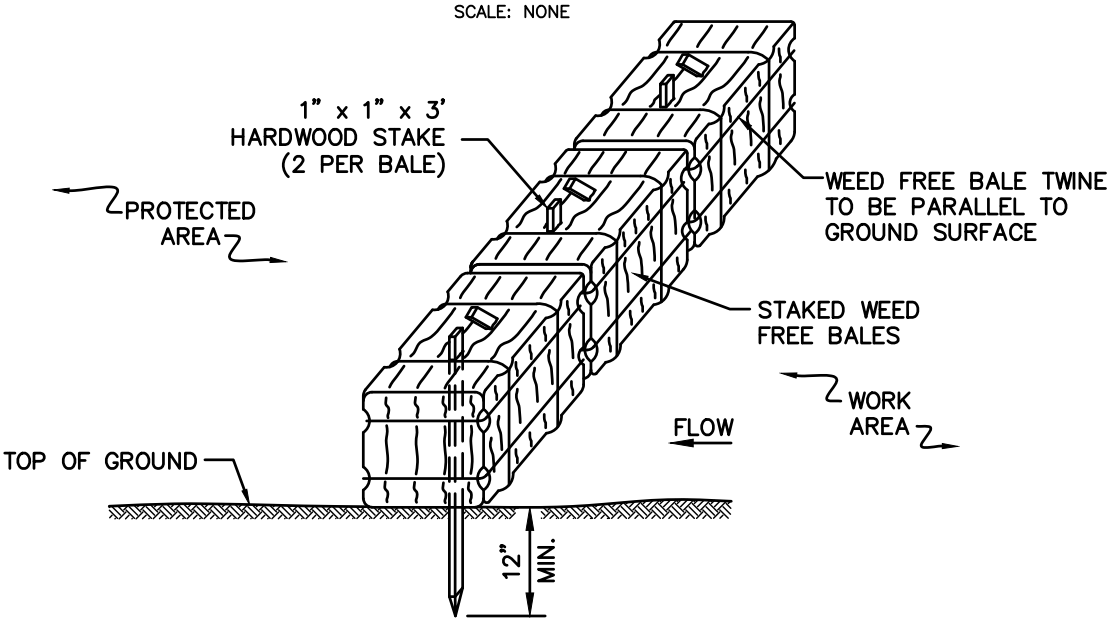
**See EG303NE_Form2 for BMP details**

| | 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

SCALE: NONE




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

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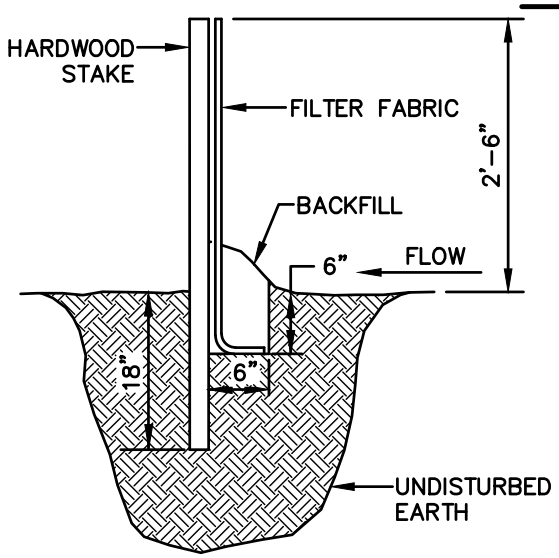


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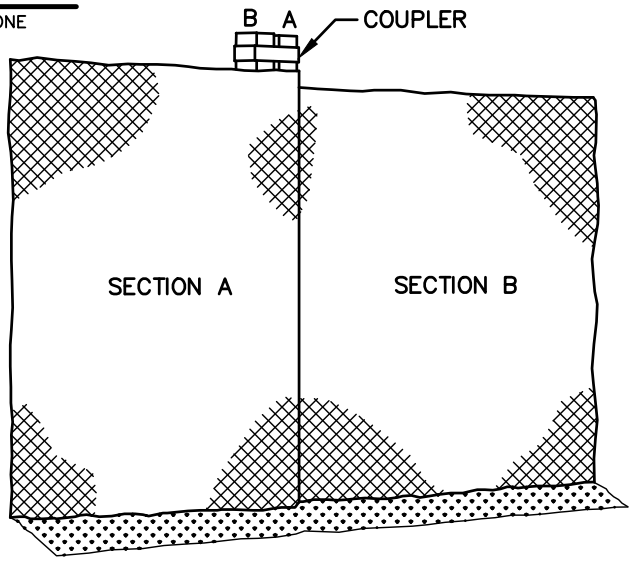


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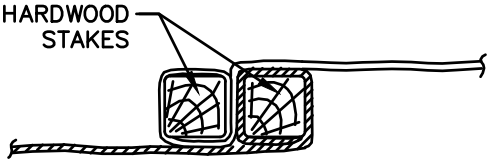



PLAN

# BMP PICTURE

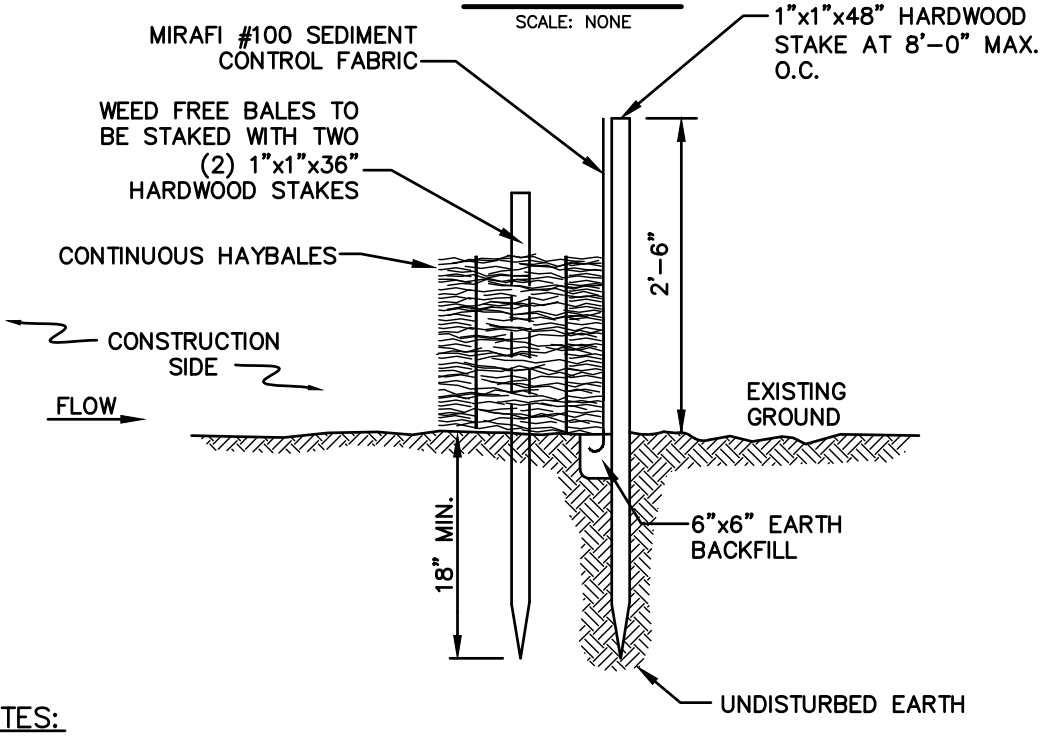


SEC-2
SEDIMENT CONTROL FENCE

File: Sediment_Fence.dwg

# BMP DETAIL

SCALE: NONE



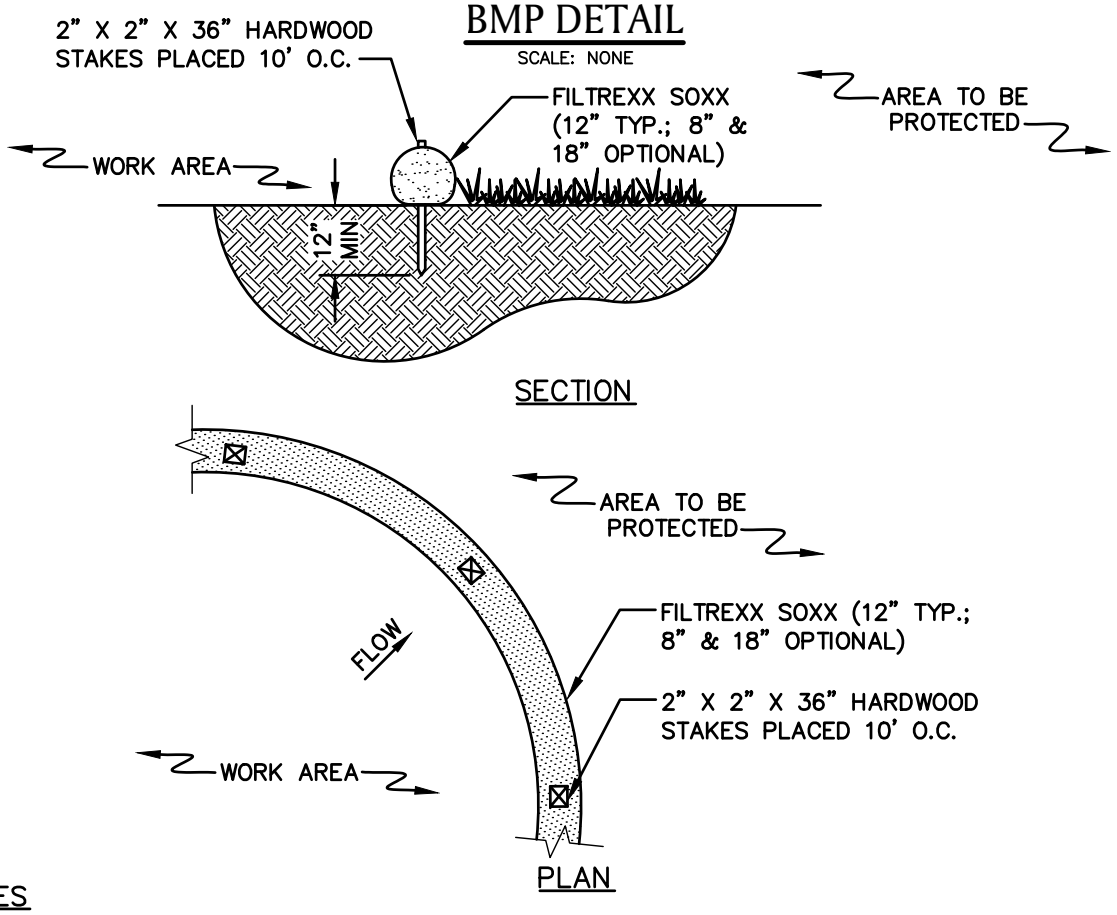

## NOTES:

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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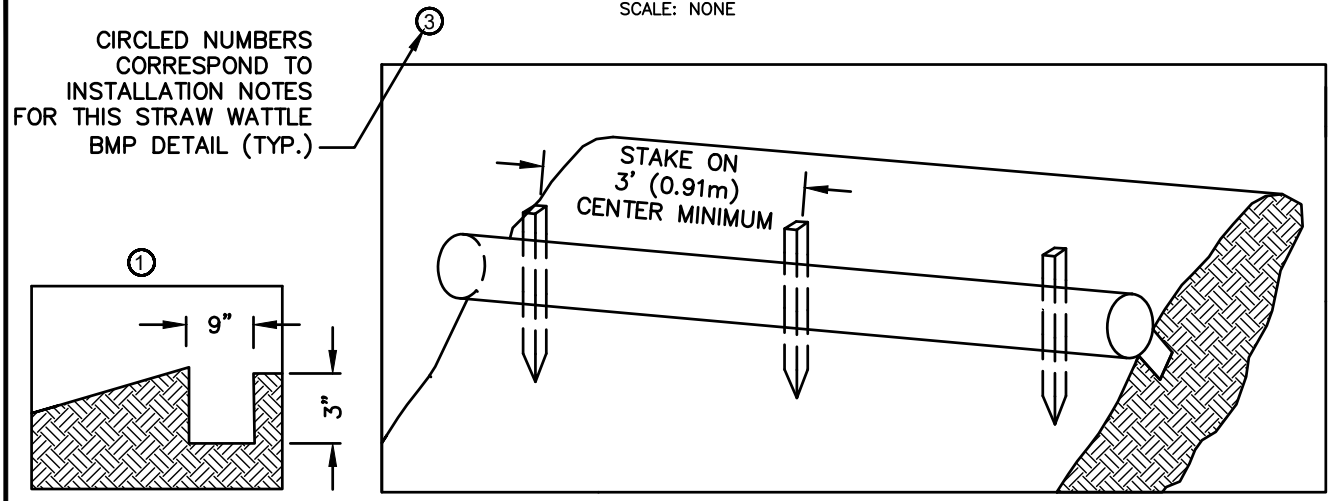
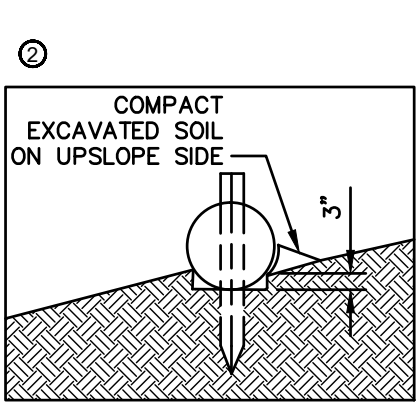
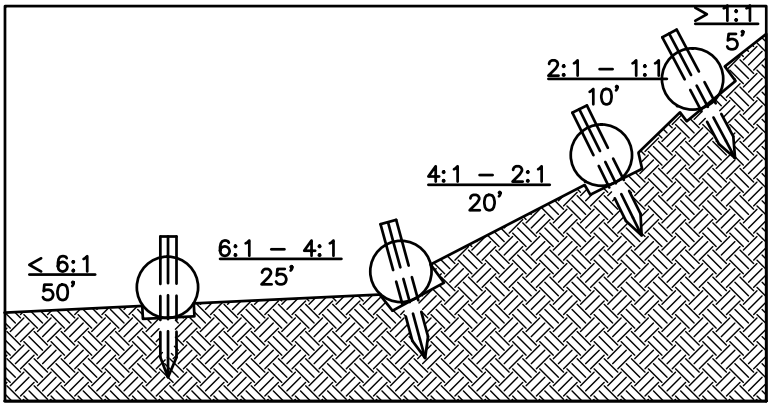



TYPICAL WATTLE SPACING DETAIL

## 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)

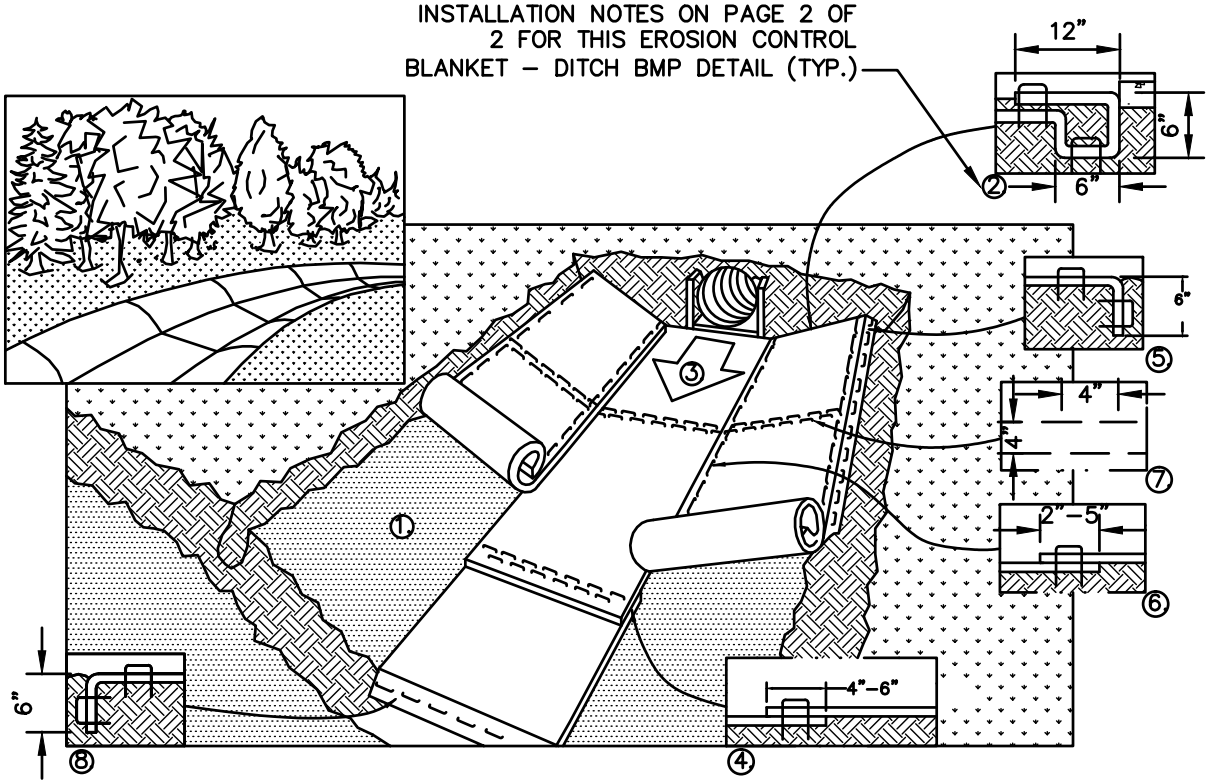
## ALTERNATE STAKING INSTALLATION NOTES:

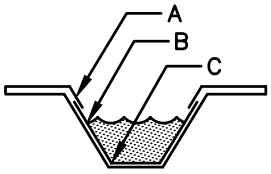
1. ON SHALLOW SLOPES (≤4:1), STRAW WATTLE MAY BE SECURED WITH 18–24" HARDWOOD STAKES DRIVEN AGAINST THE SIDES OF THE WATTLE INSTEAD OF THROUGH. STAKES SHALL ALTERNATE SIDES, AND BE SPACED 3–4' MAX.
2. TWINE SHALL BE TIED FROM STAKE TO STAKE, CRISS–CROSSING THE STRAW WATTLE. TIE TWINE TO STAKES BELOW 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**

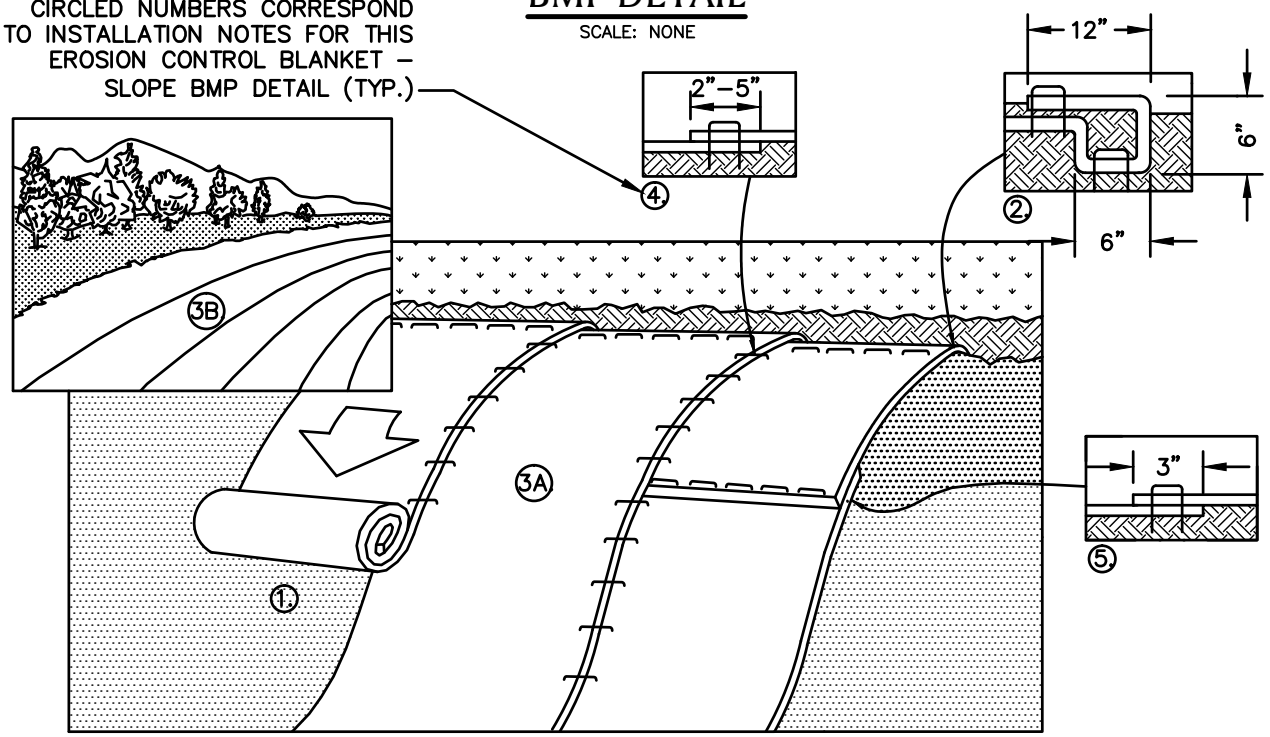


SEC-6
EROSION CONTROL BLANKET - DITCH * (2 OF 2)

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**

**APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES**



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

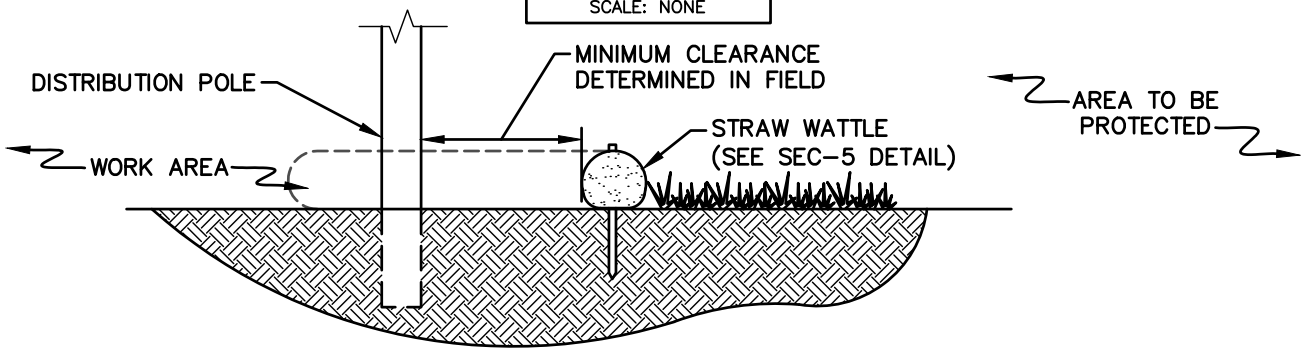
1. New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites – New England Wetland Plants, Inc.
2. Northeast Wetland Grass Seed Mix – Southern Tier Consulting (STCMX–7)
3. Ernst Conservation Seeds and similar companies can create a custom seed mix matching the composition above (with site specific additions if necessary).

## GERNERAL NOTES:

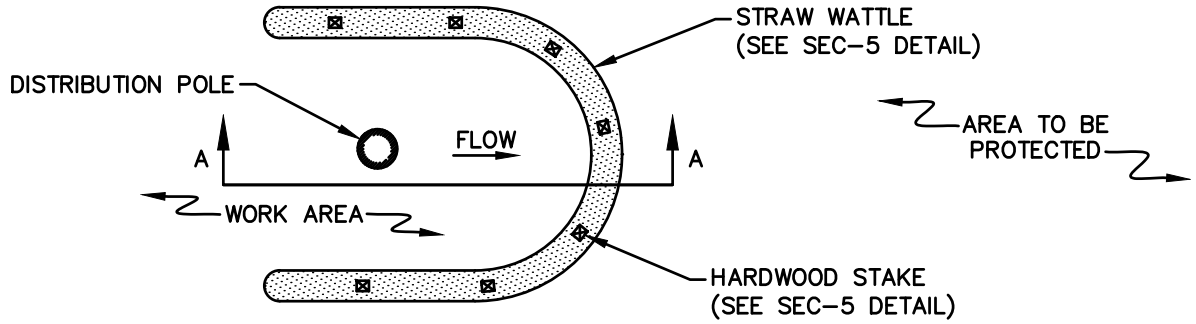
1. Seed mixes described herein are intended to cover a variety of typical new england landscapes. However, site specific seed mixes will need to be evaluated in coastal or mountainous regions.
2. Seed mixes described herein are intended for general ROW restoration. Site specific wetland seed mixes may 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

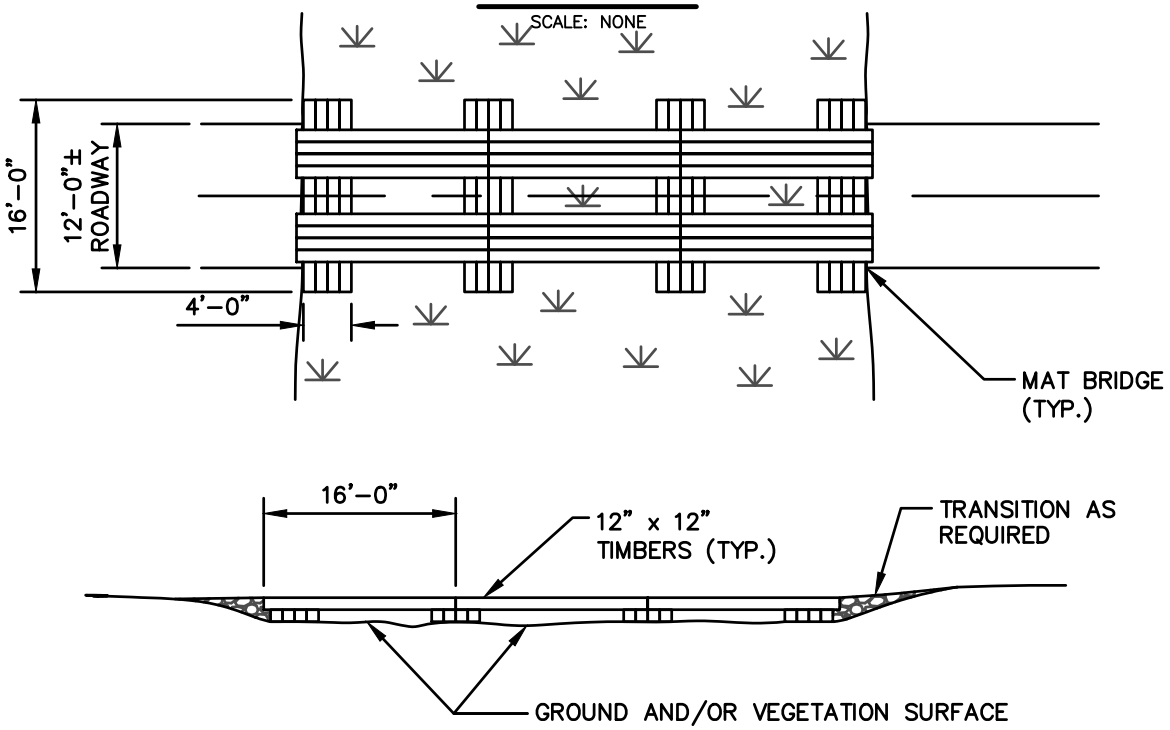
SCALE: NONE


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:

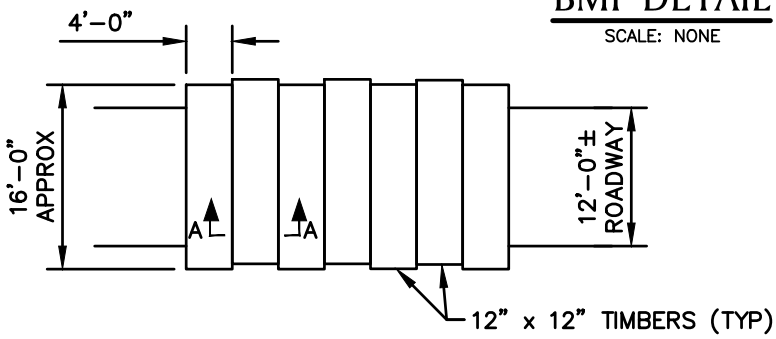
1. WHERE STREAM WIDTH ALLOWS, INSTALL CONSTRUCTION MATS TO SPAN THE WATERCOURSE IN ITS ENTIRETY WITHOUT STRINGER PLACEMENT IN THE WATER OR ANY RESTRICTION OF STREAM FLOW.

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.

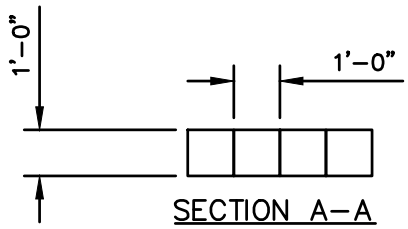
3. AT STREAM CROSSINGS THAT CANNOT BE SPANNED BY A SINGLE SECTION OF CONSTRUCTION MATTING, AND WHERE PERMITS ALLOW, STRINGERS SHALL BE PLACED ATOP THE STREAM BED PARALLEL TO THE FLOW OF WATER.

# BMP DETAIL

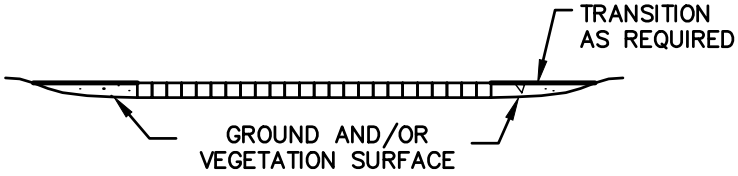
SCALE: NONE




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

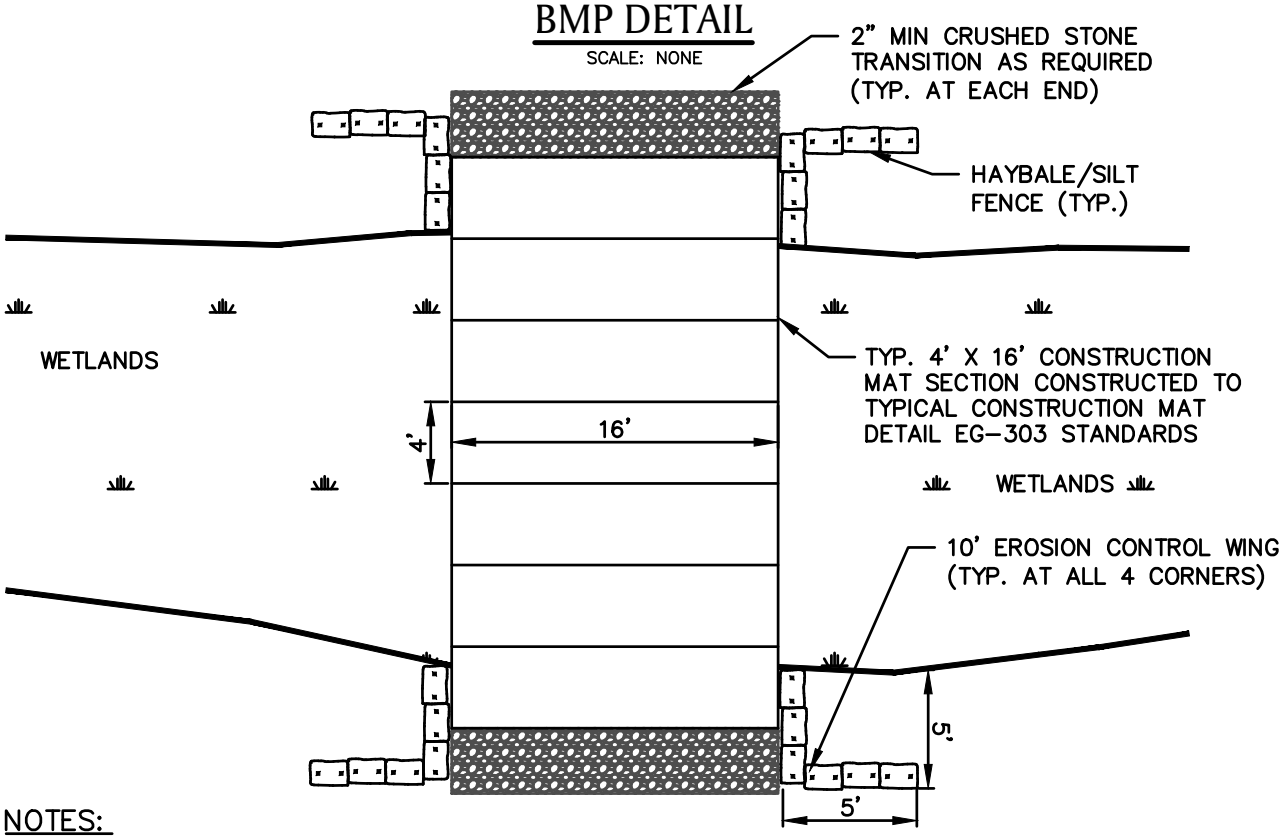
CM-3
CONSTRUCTION MAT LAYOUT
(WITH TRANSITION)



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

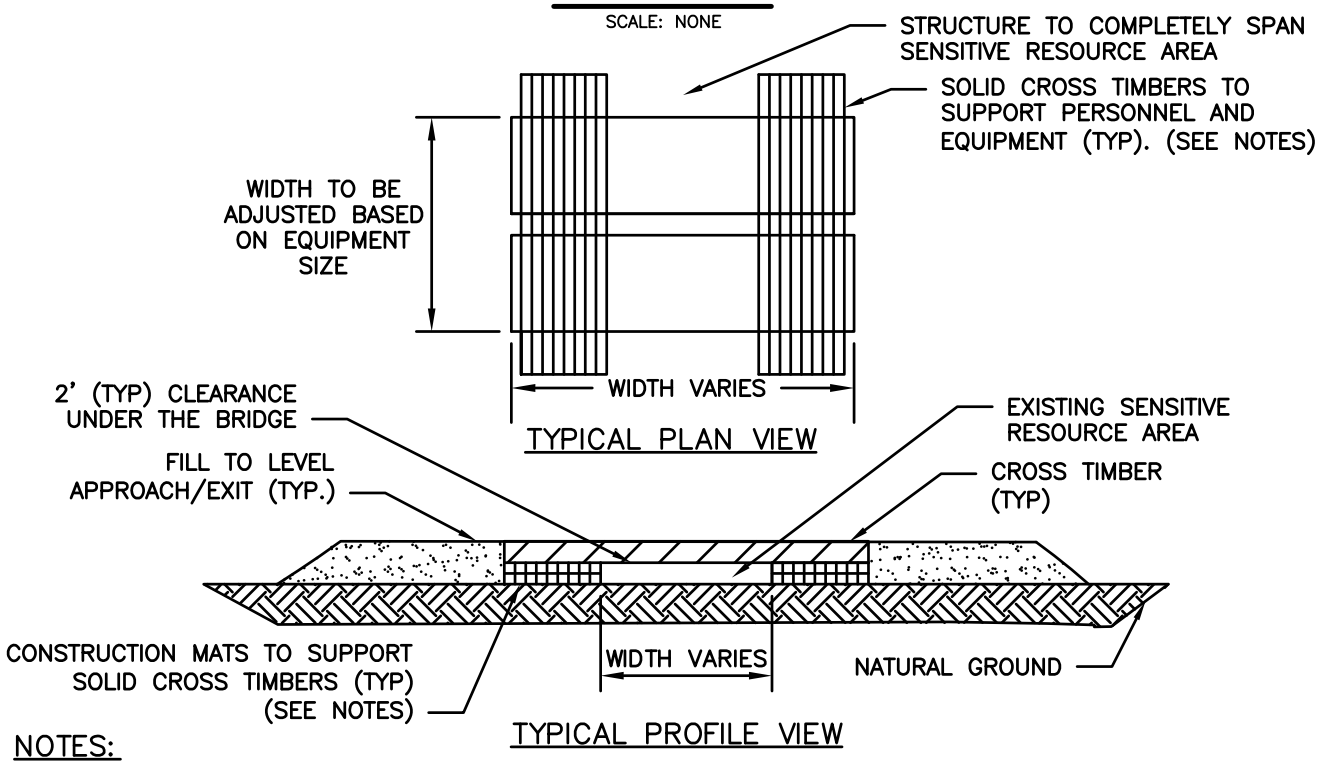
**CM-4**
CONSTRUCTION MAT LAYOUT
(WITH TRANSITION AND BMPs)



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

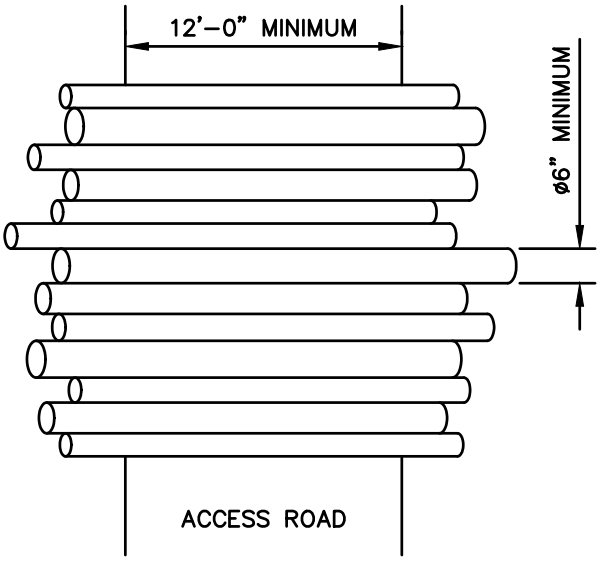


CM-5
CONSTRUCTION MAT - AIR BRIDGE

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

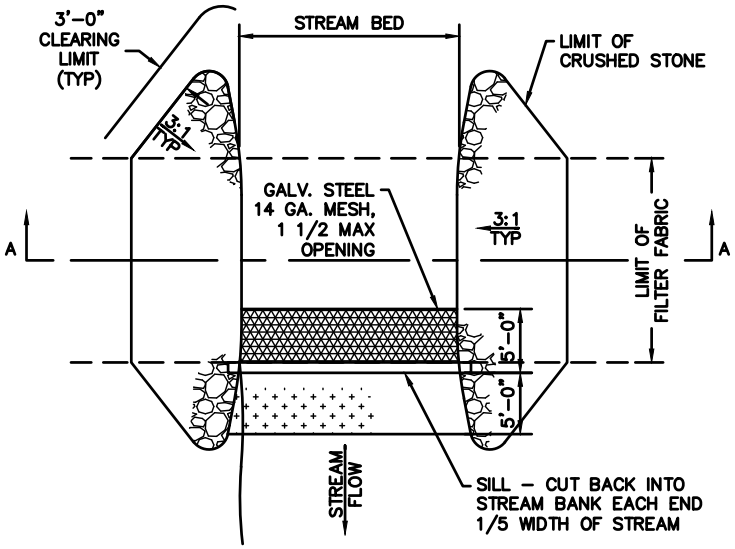


CM-6
CORDUROY ROAD

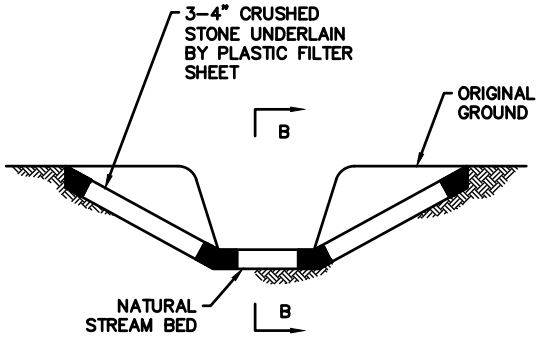
File: Corduroy_Road.dwg

# BMP DETAIL

SCALE: NONE




PLAN VIEW




SECTION 'A-A'

# BMP PICTURE

**APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES**
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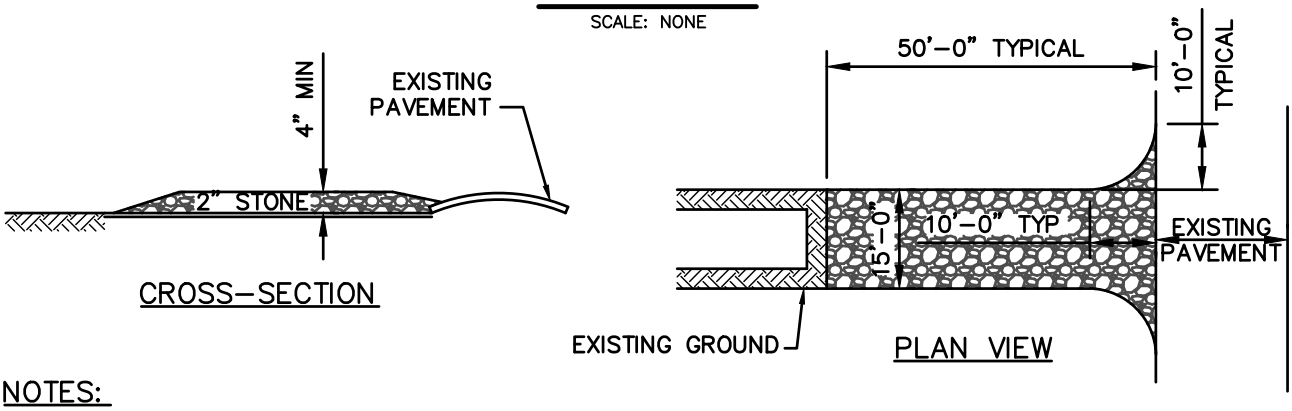
CM-7
ROCK FORD

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

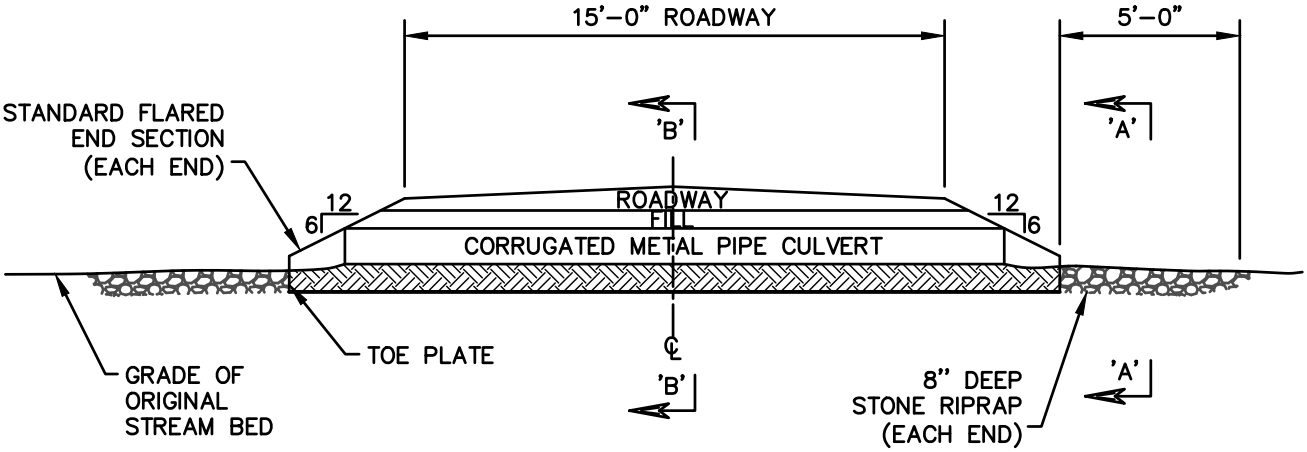


CM-8
TEMPORARY CONSTRUCTION ENTRANCE/ EXIT

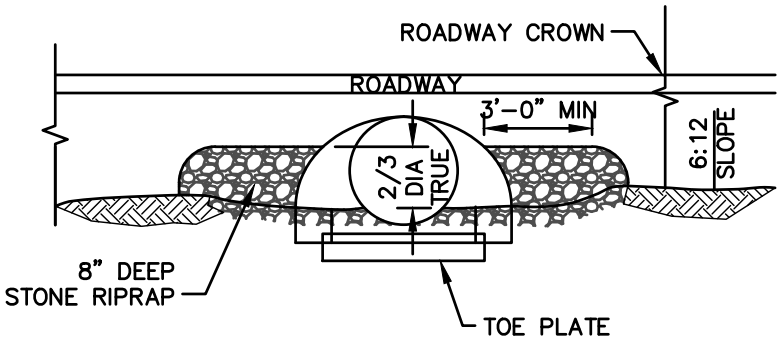
File: Temp_Construction_Ent.dwg

# BMP DETAIL

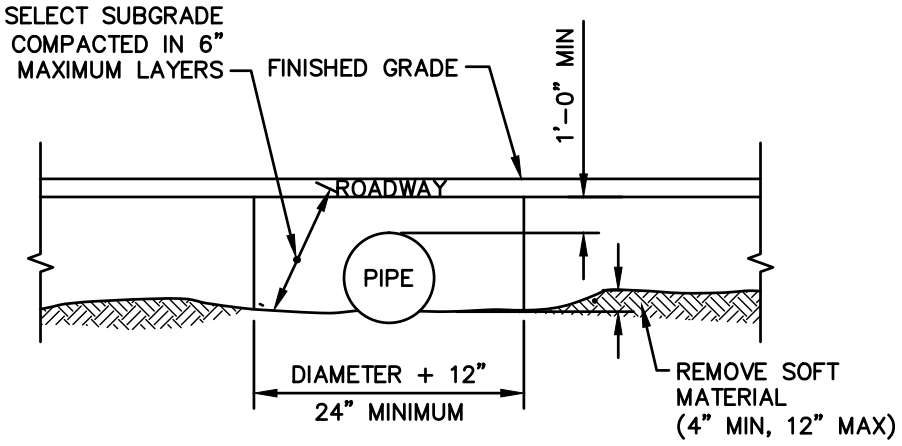
SCALE: NONE




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

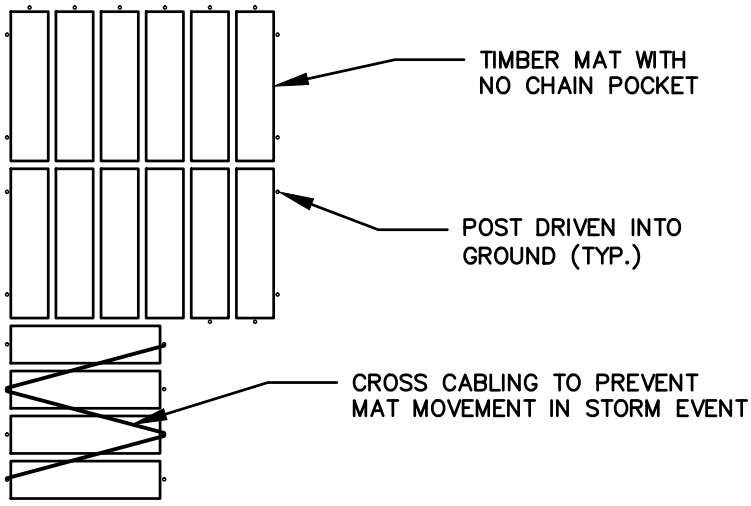

NO ACCESS – WETLAND/STREAM CROSSING MATS REQUIRED

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

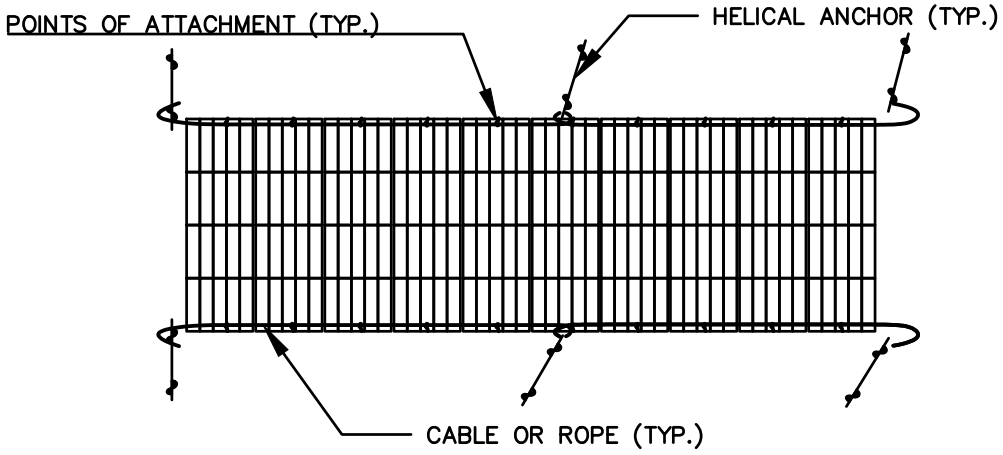
NOTES:

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:

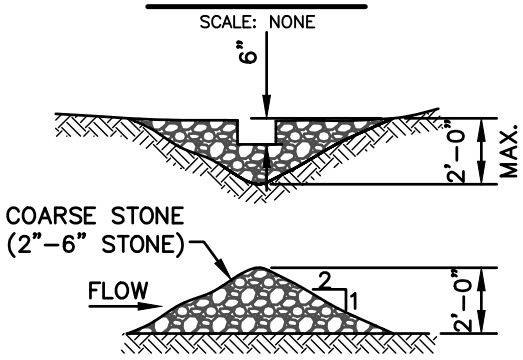
1. PRODUCT TO BE MUTUAL INDUSTRIES' WIRE BACKED SILT FENCE OR APPROVED EQUAL BY NATIONAL ENVIRONMENTAL SCIENTIST.
2. COORDINATE INSTALLATION METHOD AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

# BMP PICTURE

NOTE:

1. PICTURE SHOWS SEDIMENT FILTER WITHIN A WETLAND.

# BMP DETAIL




## STONE CHECK DAM

NOTES:

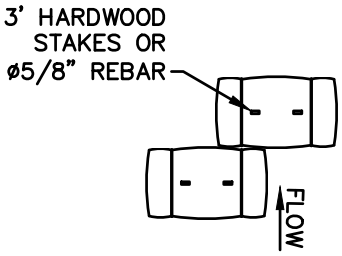
1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. THE CENTER OF THE CHECK DAM MUST BE AT LEAST 6" LOWER THAN THE OUTER EDGES.
4. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
5. MAX. SPACING: 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

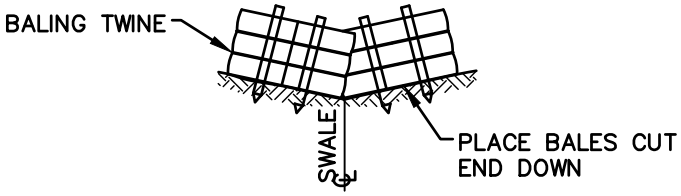

NOTE: A SMALLER STONE SIZE IS SHOWN IN THIS PICTURE.

# BMP DETAIL

SCALE: NONE




PLAN VIEW




SECTION VIEW

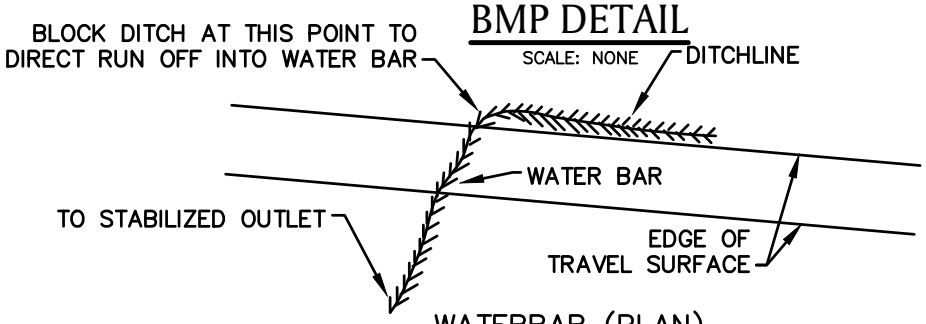
NOTES:

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.

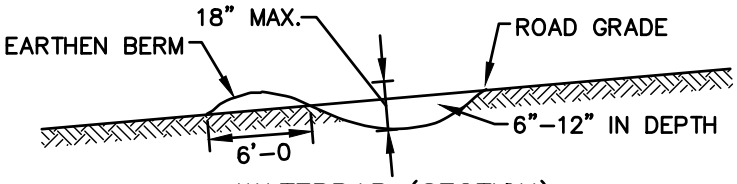
# BMP PICTURE

# BMP DETAIL

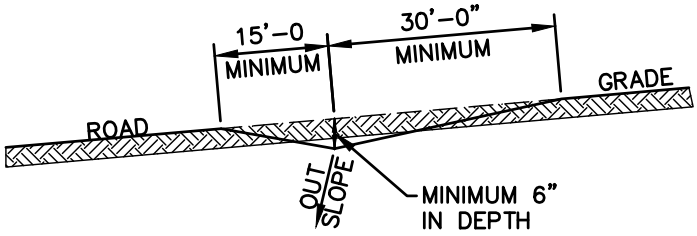
SCALE: NONE




WATERBAR (PLAN)




WATERBAR (SECTION)




DISCHARGE (SECTION)

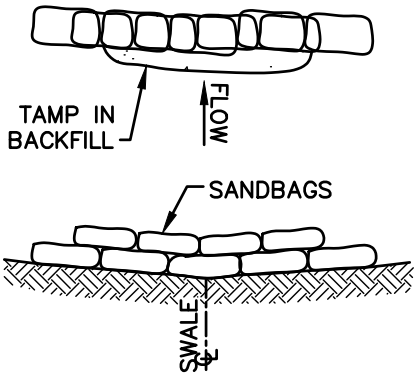
NOTE:

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"

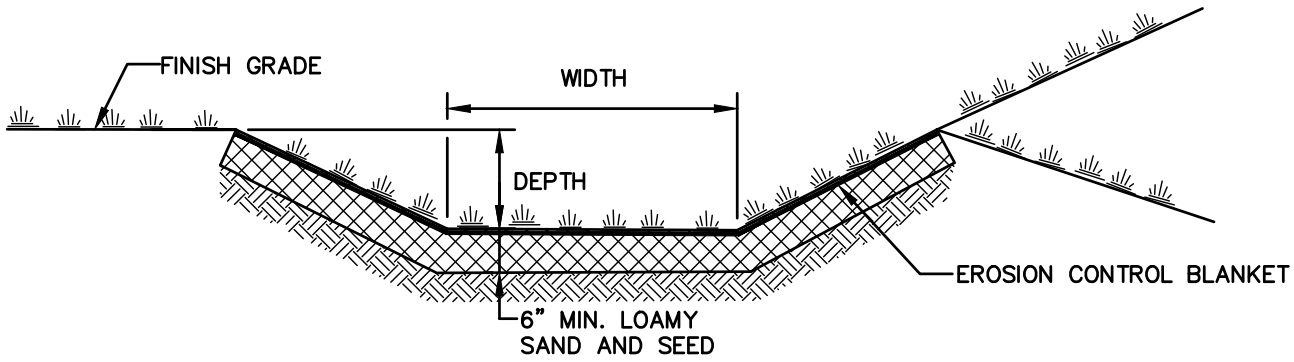
# BMP PICTURE

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

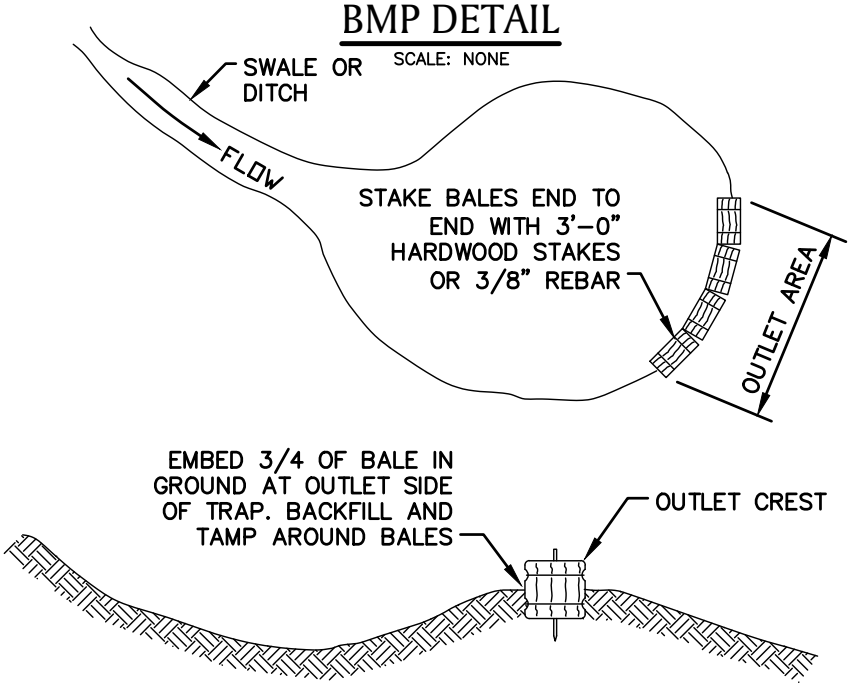


AA-8
DRAINAGE SWALE AND
LINED DITCH

File: Lined_Drainage_Swale.dwg

# BMP DETAIL

SCALE: NONE




## TYPICAL PROFILE

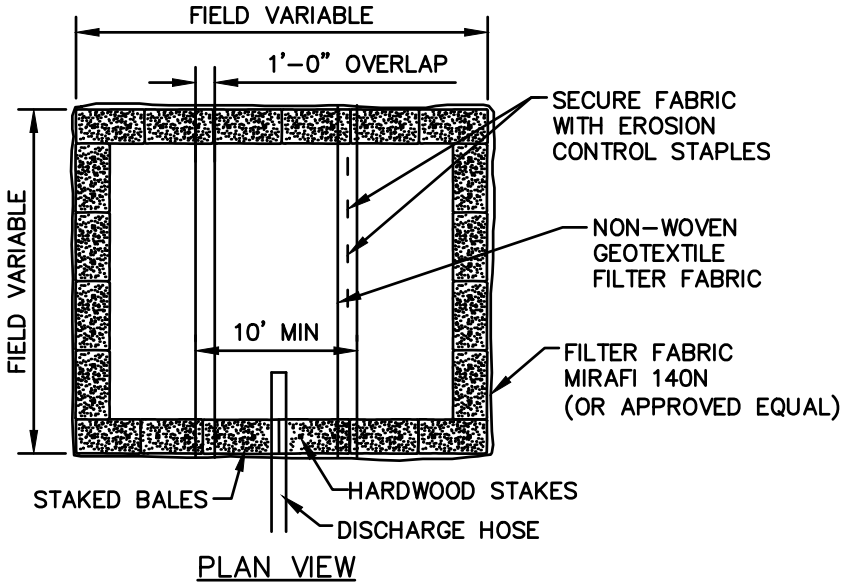
## NOTES

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.

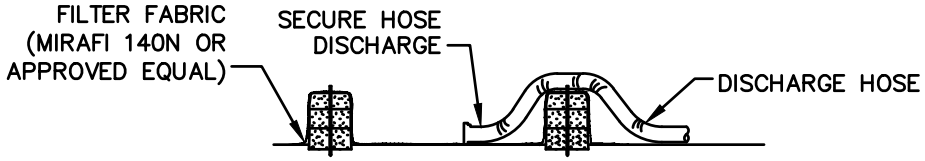
# BMP PICTURE

# 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

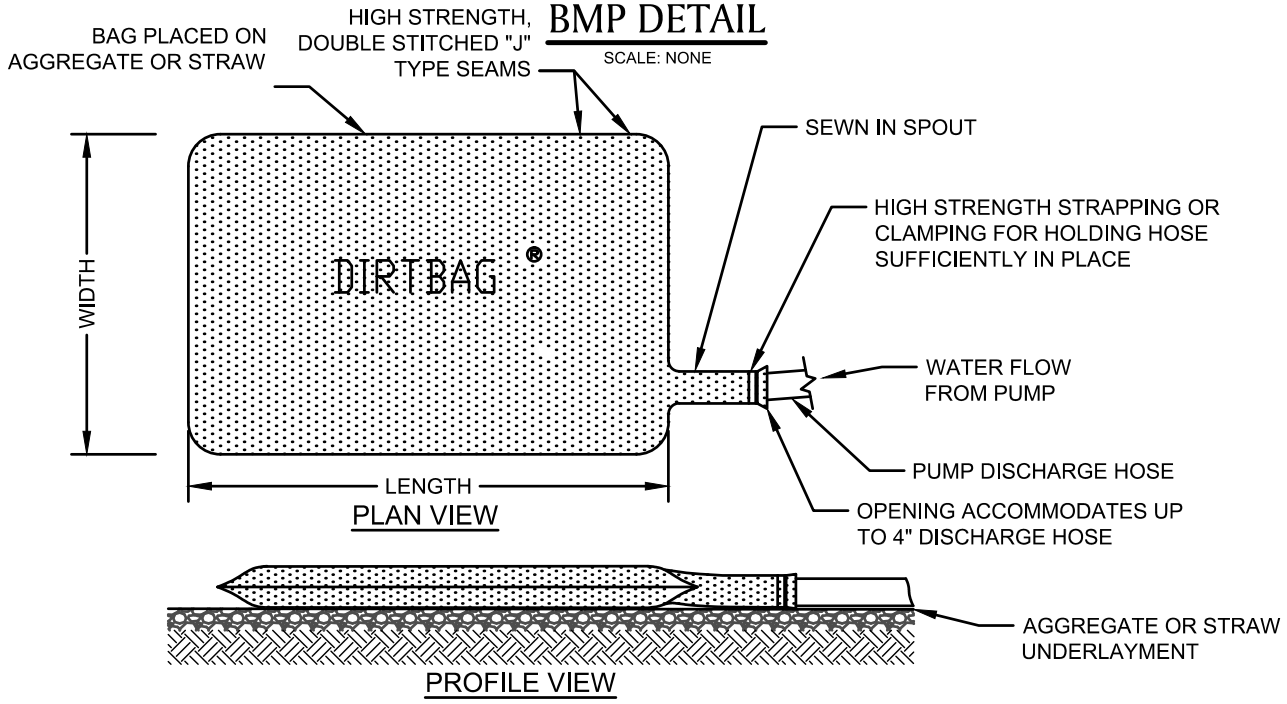
# BMP PICTURE

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

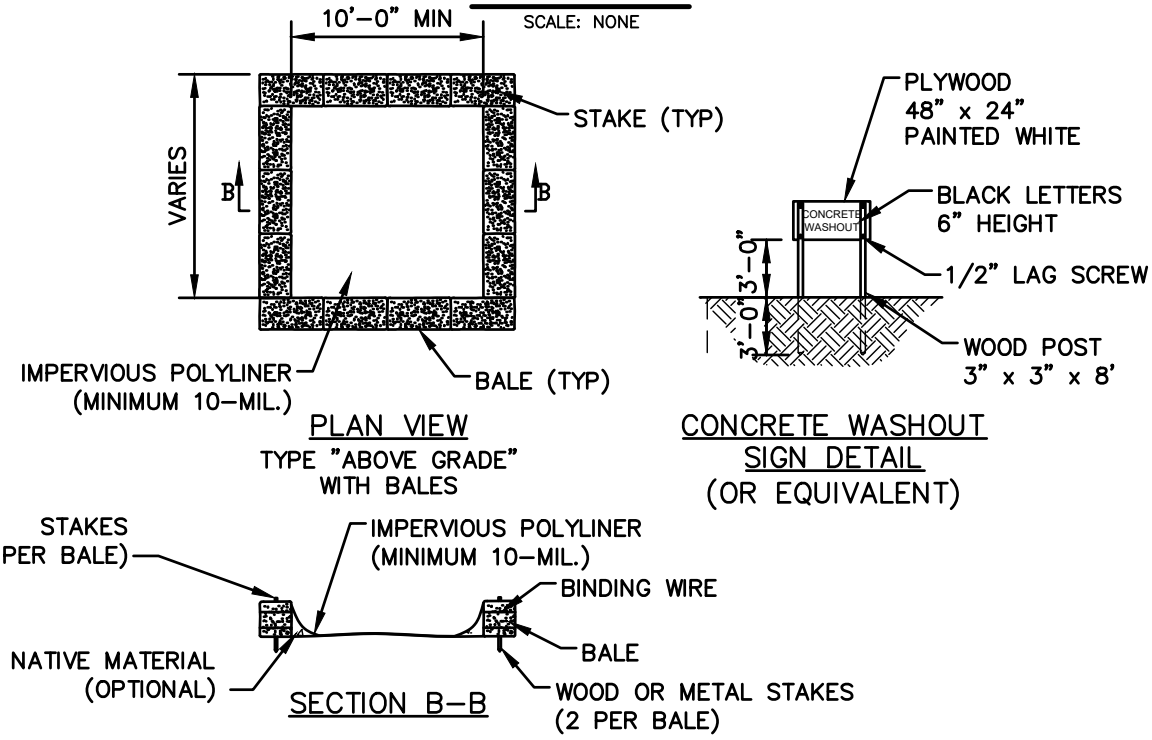
* PICTURE AND DETAIL PROVIDED BY ACF ENVIRONMENTAL



AA-12
DIRTBAG *

File: Dirtbag.dwg

# BMP DETAIL



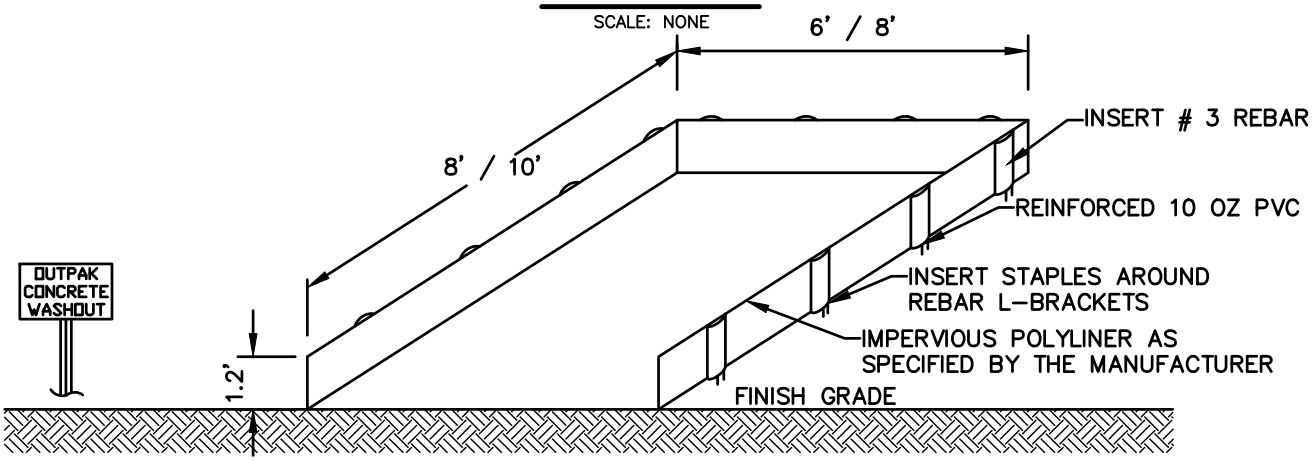

NOTES:

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**
**APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES**
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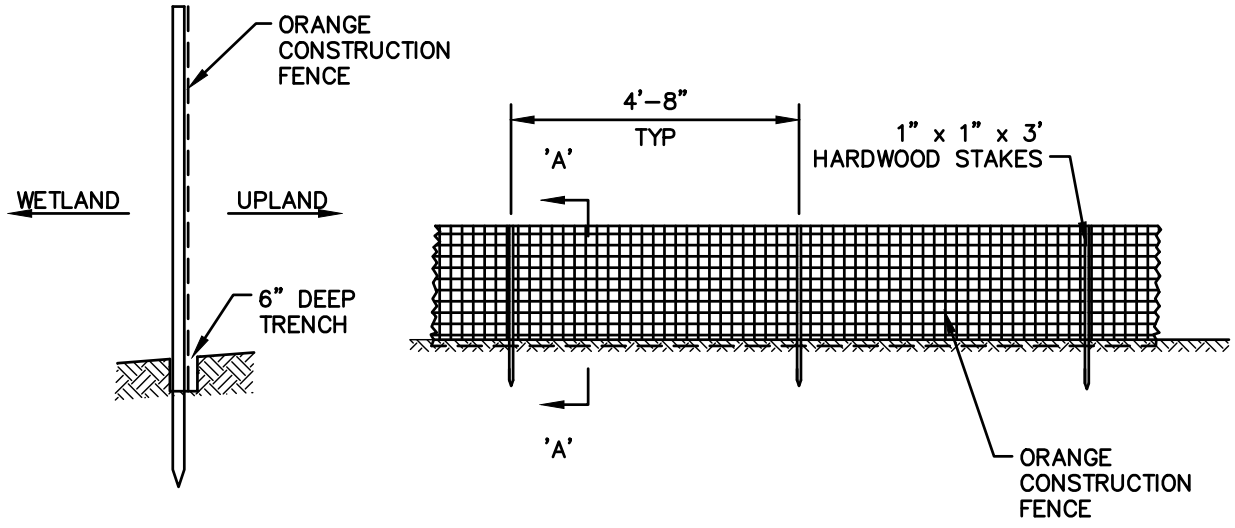
AA-14
OUTPAK CONCRETE WASHOUT *

File: Outpak_Washout.dwg

# BMP DETAIL

SCALE: NONE




SECTION A-A

# BMP PICTURE

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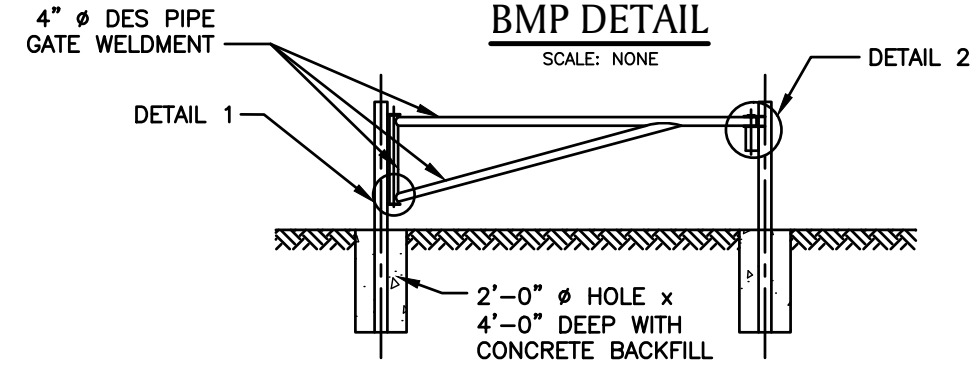
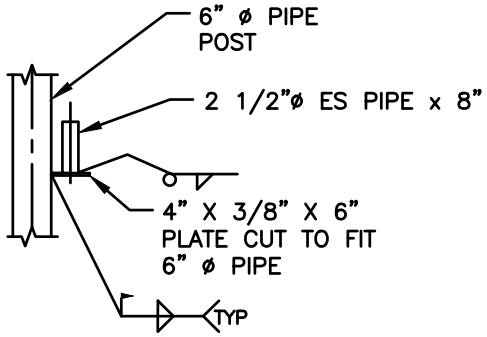
AA-15
BARRIER FENCE
(CONSTRUCTION FENCE)

File: Barrier_Fence.dwg

# BMP DETAIL

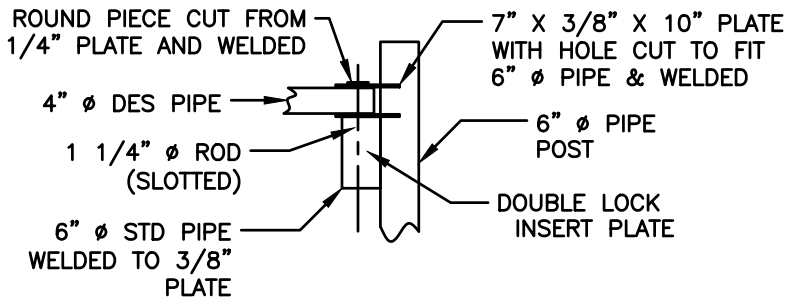
SCALE: NONE




DETAIL 1

SIMILAR DETAIL AT TOP




DETAIL 2

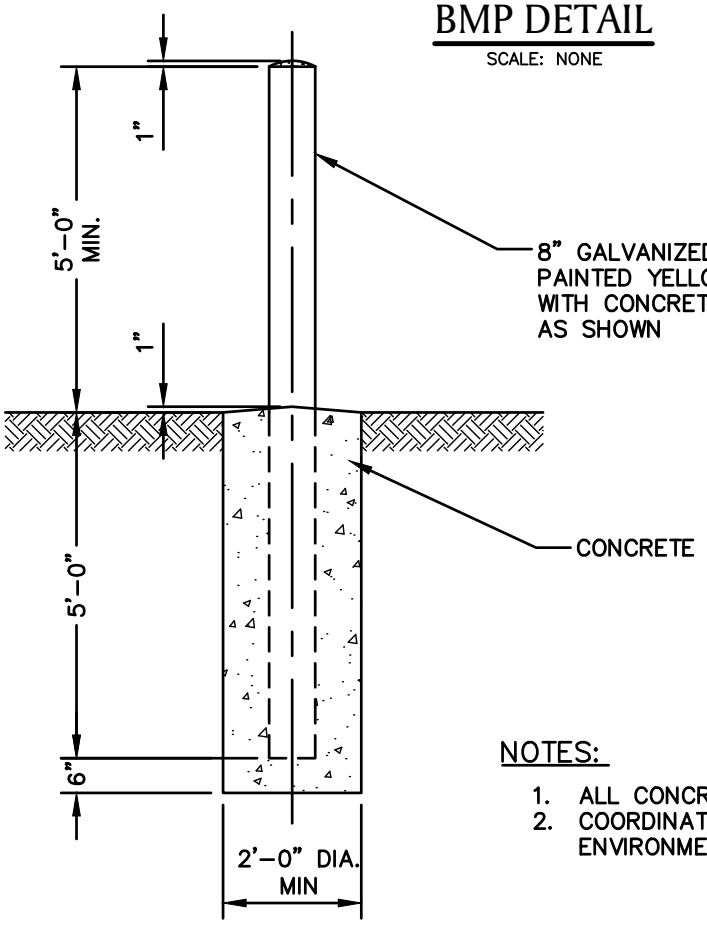
NOTES:

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.

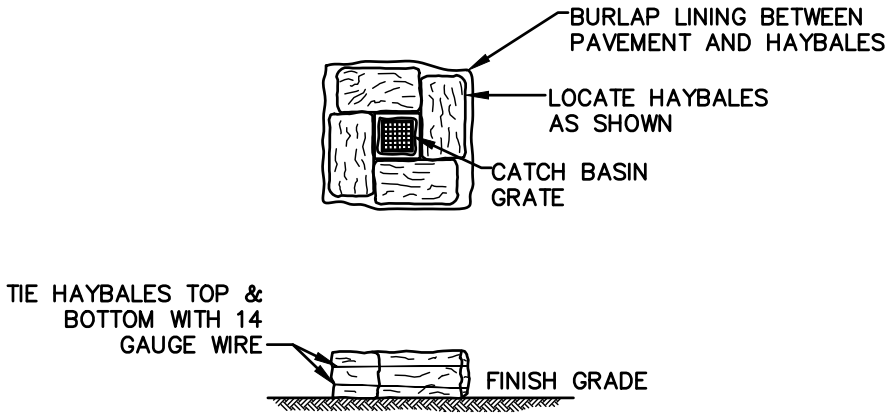
**Barriers** – Woven geotextiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

**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



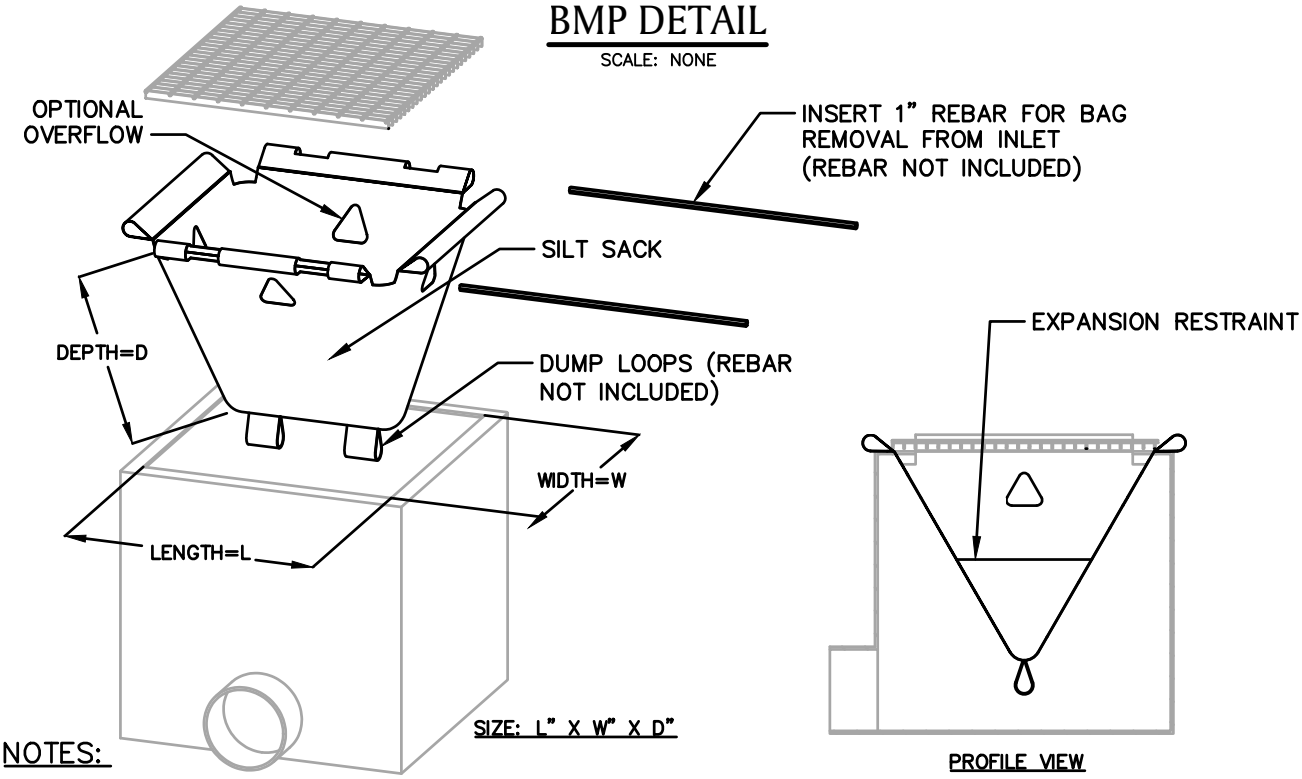

NOTES:

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**

**APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES**

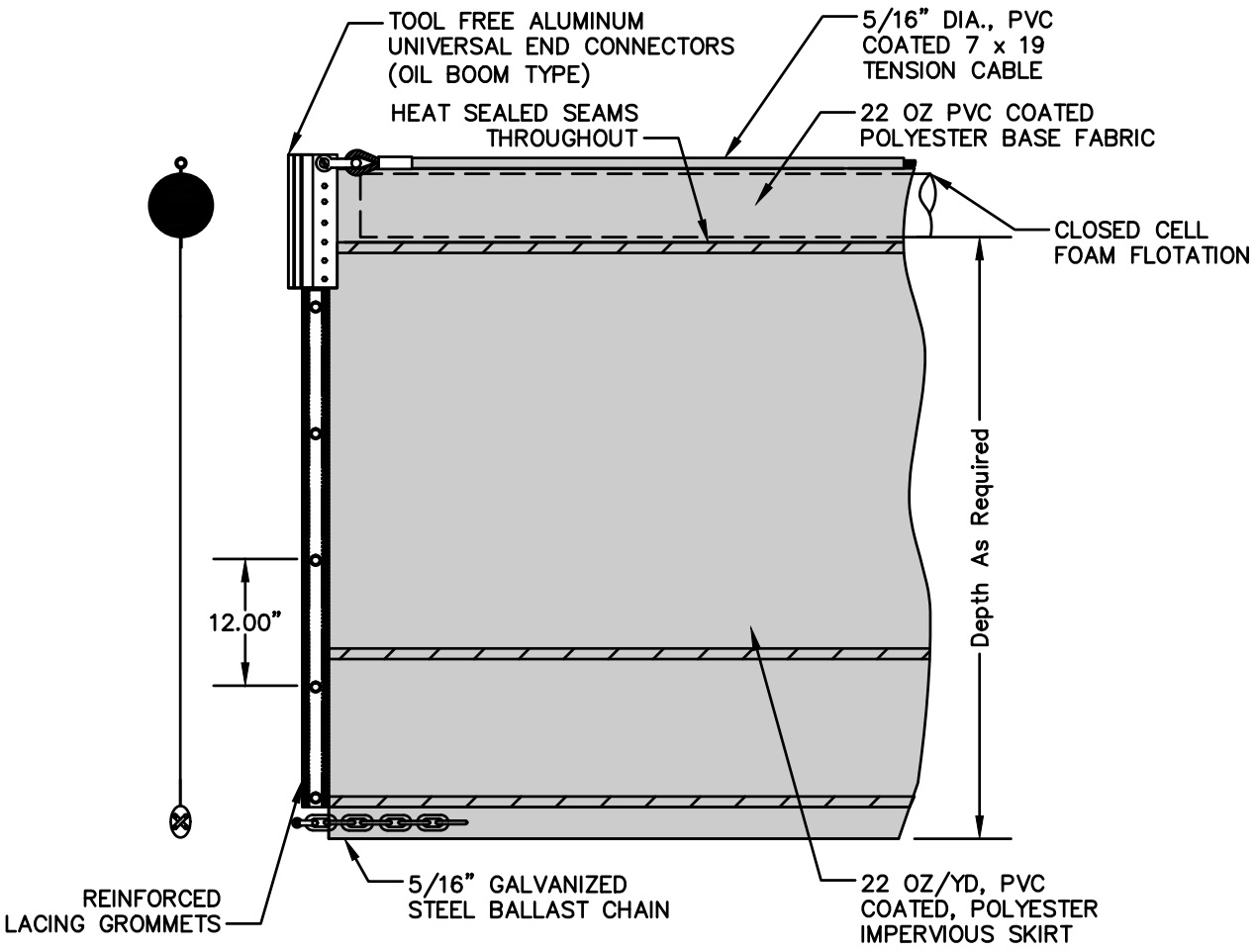


AA-20
SILT SACK *

File: SILT SACK.dwg

# BMP DETAIL

SCALE: NONE




# BMP PICTURE

*** DETAIL PROVIDED BY BROCKTON EQUIPMENT / SPILLDAM INC.**
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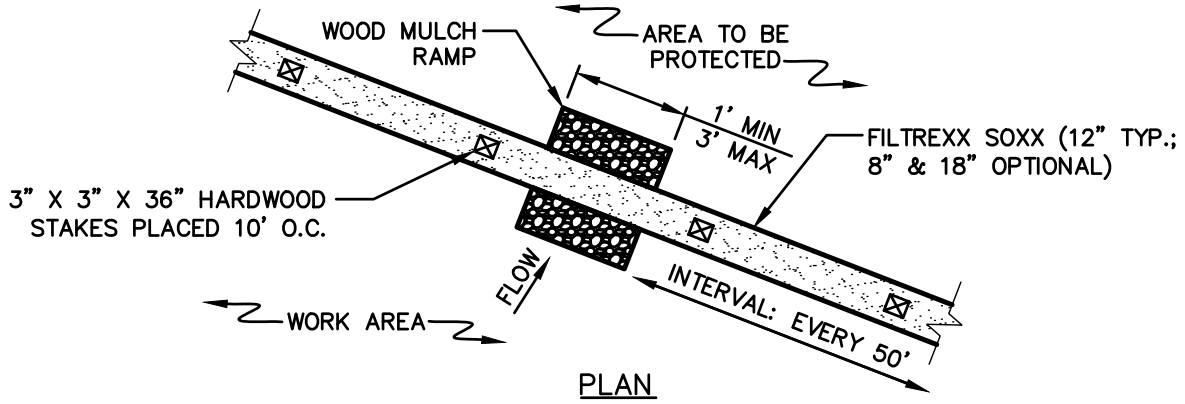
AA-21
TURBIDITY CURTAIN *

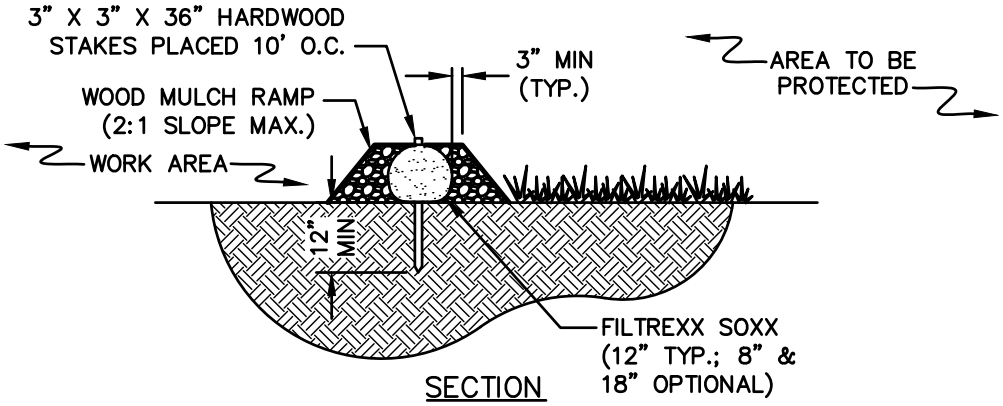
File: Turbidity_Curtain.dwg

# BMP DETAIL

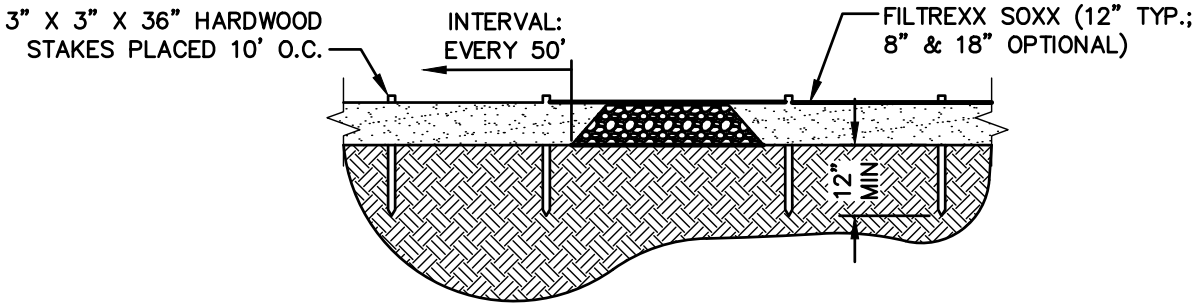
SCALE: NONE




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

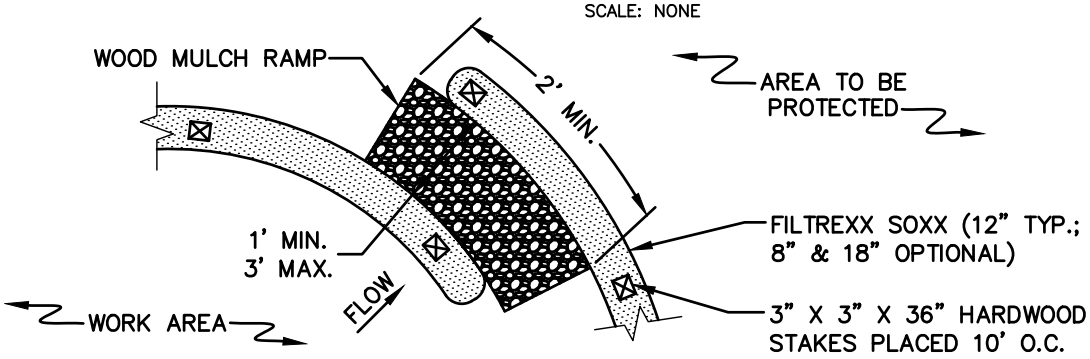
## ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

1. SILTSOXX, BY FILTREX INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.

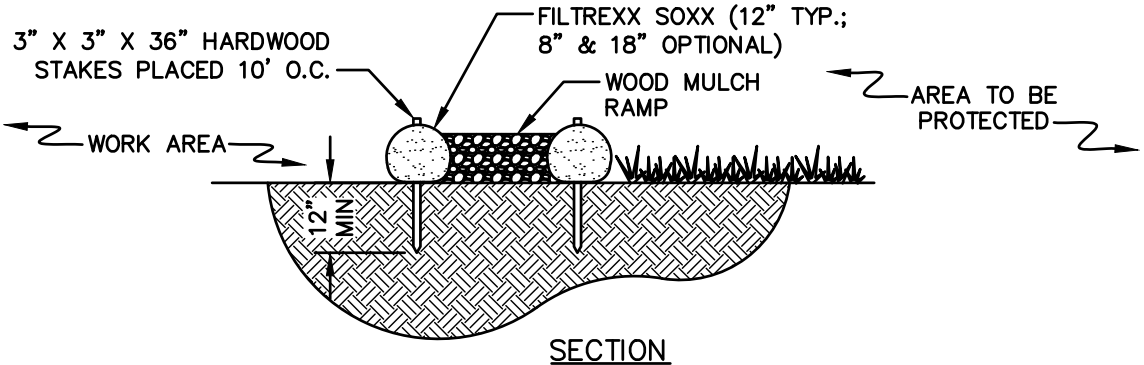
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS, OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

# BMP DETAIL

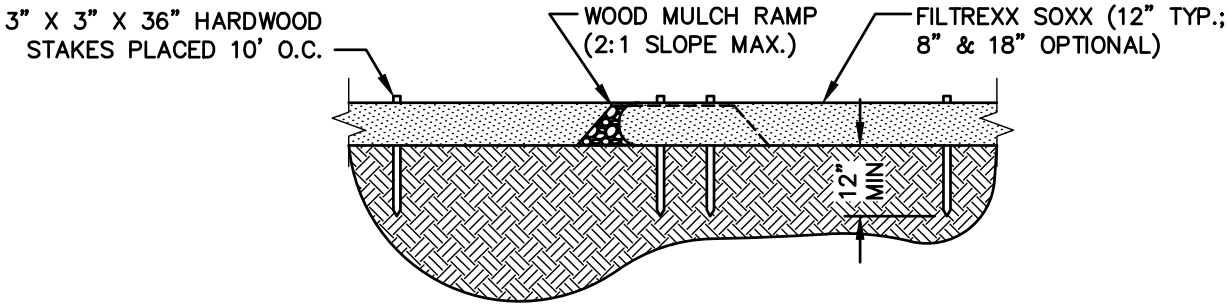
SCALE: NONE




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

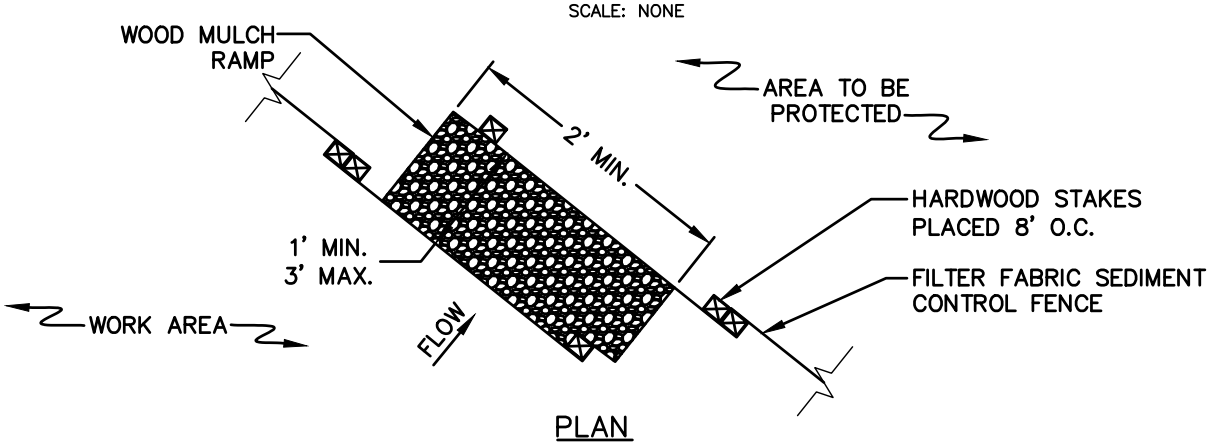
SILTSOXX AMPHIBIAN & REPTILE CROSSING #2

## ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

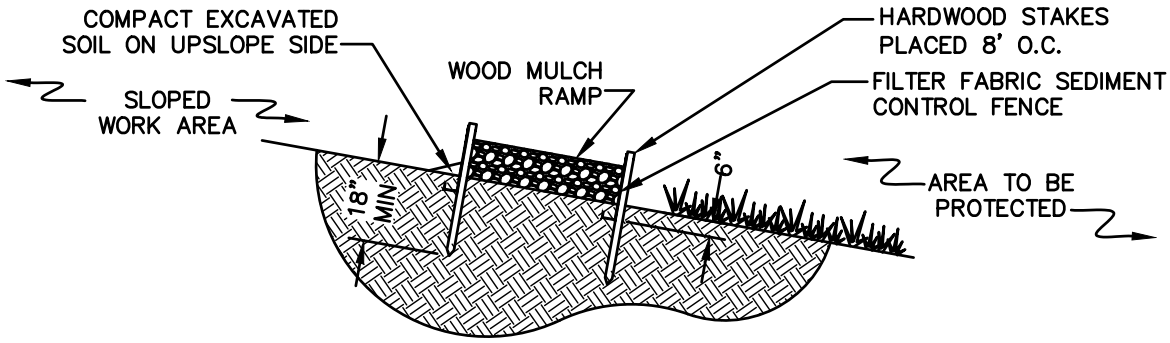
1. SILTSOXX, BY FILTREX INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

# BMP DETAIL

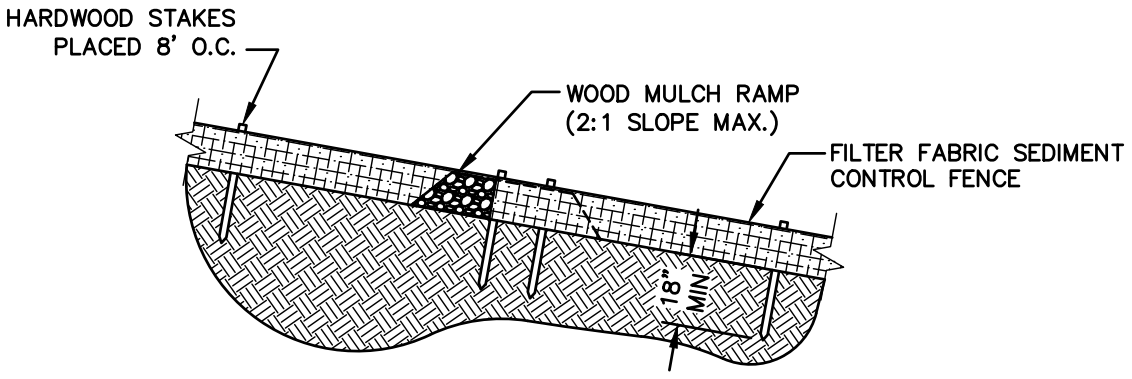
SCALE: NONE




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.

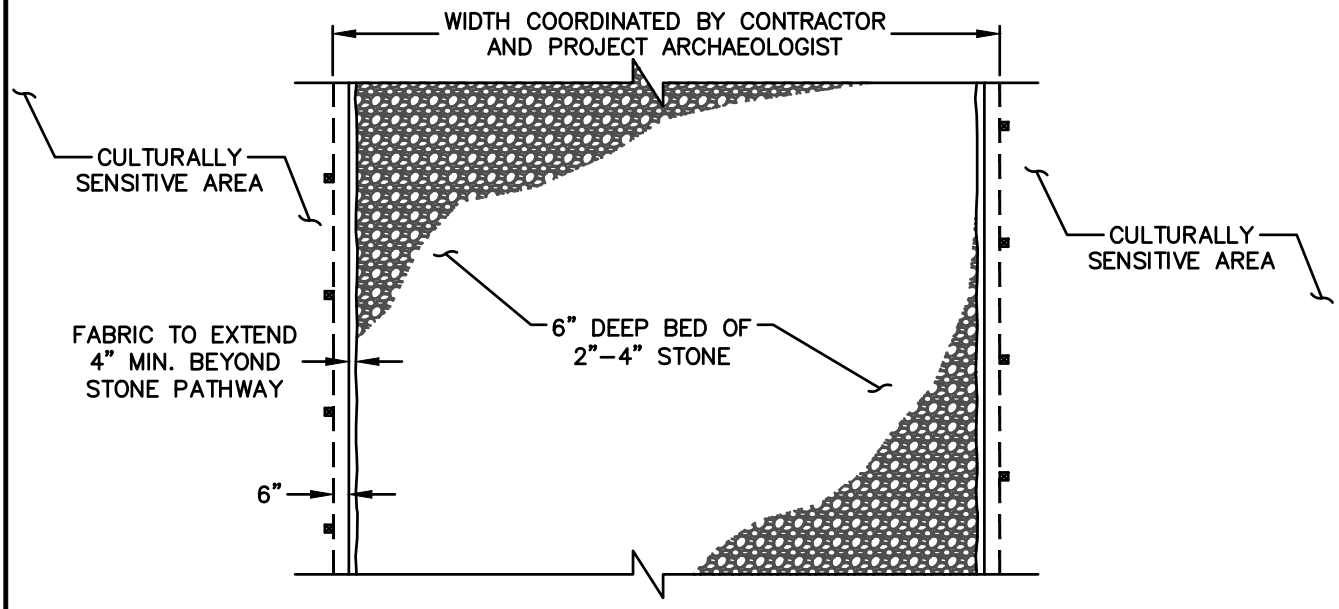


BMP # AA-24
SILT FENCE AMPHIBIAN & REPTILE CROSSING #3

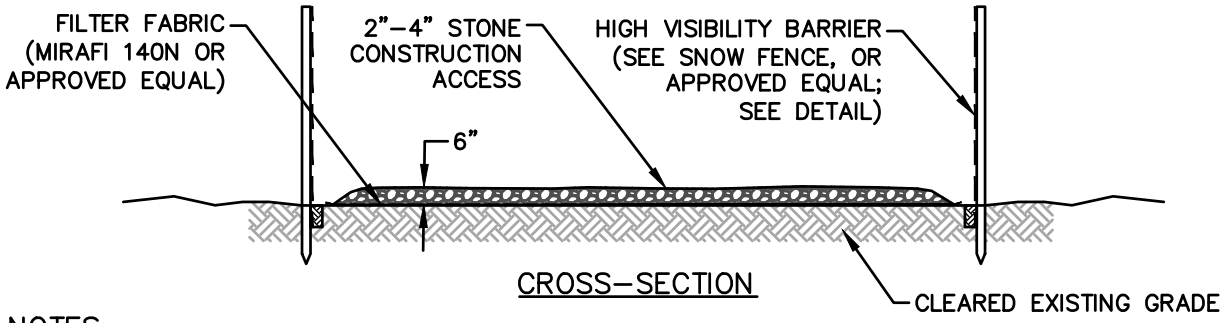
File: Alternate_Siltsoxx.dwg

# 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.

---

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 E: Agency Consultations

## DCR

## NHESP

## Historical Commission Correspondence

**From:** Whoriskey, Erin M.
**To:** Sean Grant (sean.grant@state.ma.us); DeBlander, Bernadette (DCR); Freda, Kelley (DCR)
**Cc:** Herzlinger, Daniel
**Subject:** [EXTERNAL] Central Mass Reliability Project
**Date:** Friday, March 10, 2023 10:02:18 AM
**Attachments:** Lines 313_343 and O141_P142 DCR USGS 20230310.pdf



Good Morning,

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 from Millbury, through Grafton, Worcester, Shrewsbury, Boylston, West Boylston, Sterling, Lancaster, Shirley and Ayer.

In addition to providing long-term, safe and reliable access, the access road improvements will be utilized to immediately support three separate NEP maintenance projects within this ROW which are: Line P142/O141 Flyover Switch Project which involves the installation of switch structures, Line P142/O141 Asset Condition Refurbishment (ACR) Project which involves replacing structures and Optical Ground Wire (OPGW), and Line 313/343 ACR Project which involves replacing structures and installing OPGW in two phases.

Upgrades to existing access roads and the construction of new and permanent work pads will be necessary and will occur within the existing utility ROW in order to provide safe and reliable access. NEP is proposing to perform these improvements at one time in order to provide cost efficiencies to our customers, reduce abutter disruption and minimize regulatory and administrative burden. No significant tree clearing or expansion of the ROW is proposed as part of this project.

NEP is preparing an Expanded ENF to be filed with MEPA in the next few months. NEP would like to review the project scope with you prior to submittal. If you are interested in hearing more about the projects prior to the ENF, we can make ourselves available at your convenience. I'm sure ½ to 1 hour would suffice.

Please see the attached ROW corridor and feel free to share with others I may have missed.

Erin Whoriskey Cahill (she/her)
Lead Environmental Scientist

New England Environmental Permitting
nationalgrid
170 Data Drive
Waltham, MA 02451
C: 774-364-3445
Erin.whoriskey@nationalgrid.com

Please note our new office location.

**From:** Whoriskey, Erin M.
**To:** Lauren Glorioso (lauren.glorioso@state.ma.us)
**Cc:** Herzlinger, Daniel
**Subject:** [EXTERNAL] Central Mass Reliability Projects
**Date:** Wednesday, March 8, 2023 12:23:26 PM



Hi Lauren,

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 from Millbury, through Grafton, Worcester, Shrewsbury, Boylston, West Boylston, Sterling, Lancaster, Shirley and Ayer.

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NEP is preparing an Expanded ENF to be filed with MEPA in the next few months and compiling the necessary data for a MESA Checklist. If you are interested in hearing more about the projects prior to the ENF and Checklist, we can make ourselves available at your convenience. I'm sure ½ to 1 hour would suffice.

Erin

Erin Whoriskey Cahill (she/her)
Lead Environmental Scientist
New England Environmental Permitting

nationalgrid
170 Data Drive
Waltham, MA 02451
C: 774-364-3445
Erin.whoriskey@nationalgrid.com

Please note our new office location.

Public Archaeology Laboratory

May 4, 2022

Brona Simon
State Historic Preservation Officer
State Archaeologist
Executive Director
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125

Re: New England Power Company – Line 313/343 ACR and OPGW Installation – Ayer to Millbury, MA
Project Notification Form, Due Diligence, and Intensive Archaeological Survey Permit Application
PAL #4120.02

Dear Ms. Simon:

On behalf of New England Power Company (NEP), enclosed please find a Project Notification Form (PNF) and a Cultural Resources Due Diligence Report prepared by The Public Archaeology Laboratory, Inc. (PAL) for the proposed Line 313/343 Asset Condition Refurbishment (ACR) and OPGW Installation Project.

Also enclosed is an application for a permit to conduct an intensive (locational) archaeological survey. The Project area is located on the Ayer, Shirley, Clinton, Sterling, Shrewsbury, Worcester North, Worcester South, and Grafton, MA USGS Topographic maps. We would like to begin investigations as soon as possible. Thank you in advance for your time and attention to this matter.

We are providing the enclosed documentation to Native American Tribes and the Massachusetts Board of Underwater Archaeological Resources (MBUAR) for their review, pursuant to requirements in the USACE Massachusetts General Permit. If you have any questions or require additional information, please do not hesitate to contact Gregory R. Dubell, Energy Projects Manager, or John Kelly, Principal Investigator, at your convenience.

Sincerely,

Deborah C. Cox, RPA
President

Enclosures

26 Main Street Pawtucket, RI 02860 | 401.728.8780 Main | 401.728.8784 Fax
palinc.com

cc: Erin Whoriskey, NEP (w/ encl. – via email)
Michael Retter, NEP (w/ encl. – via email)
Daniel Herzlinger, TRC (w/encl. – via email)
David Robinson, MBUAR (w/encl. – via email)
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email)
Mark Andrews, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email)
David Weeden, Mashpee Wampanoag Tribe (w/encl. – via email)
John Brown, III, Narragansett Indian Tribe (w/encl. – via email)
Cora Peirce, Narragansett Indian Tribe (w/encl. – via email)
Cheryl Holley, Nipmuc Indian Nation (w/encl. – via email)
Rae Gould, Nipmuc Indian Nation (w/encl. – via email)

**950 CMR: DEPARTMENT OF THE STATE SECRETARY**

**APPENDIX B**
**COMMONWEALTH OF MASSACHUSETTS**

**SECRETARY OF STATE: MASSACHUSETTS HISTORICAL COMMISSION**

**PERMIT APPLICATION: ARCHAEOLOGICAL FIELD INVESTIGATION**

## A. General Information

Pursuant to Section 27(c) of Chapter 9 of the General Laws and according to the regulations outlined in 950 CMR 70.00, a permit to conduct a field investigation is hereby requested.

1. Name(s): John M. Kelly

2. Institution: The Public Archaeology Laboratory, Inc.

   Address: 26 Main Street
   Pawtucket, Rhode Island 02860

3. Project Location: Lines 313/343 Asset Condition Refurbishment & OPGW Installation Project
   *see attached proposal*

4. Town(s): Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Grafton, and Millbury

5. Attach a copy of a USGS quadrangle with the project area clearly marked.

   *see attached*

6. Property Owner(s): New England Power Company

7. The applicant affirms that the owner has been notified and has agreed that the applicant may perform the proposed field investigation.

8. The proposed field investigation is for a(n):

   a. Reconnaissance Survey
   **b. Intensive Survey**
   c. Site Examination
   d. Data Recovery

## B. Professional Qualifications

1. Attach a personnel chart and project schedule as described in 950 CMR 70.11 (b).

**a. Personnel**

| | |
|---|---|
| Principal Investigator(s): | John M. Kelly |
| Project Archaeologist(s): | TBD |
| Field Crew: | TBD |

**b. Schedule**

| | |
|---|---|
| Fieldwork: | June – September 2022 |
| Laboratory: | October 2022 |
| Report: | November 2022 |

2. Include copies of curriculum vitae of key personnel (unless already on file with the State Archaeologist).

## C. Research Design

1. Attach a narrative description of the proposed Research Design according to the requirements of 950 CMR 70.11.

2. The Applicant agrees to perform the field investigations according to the standards outlined in 950 CMR 70.13.

3. The Applicant agrees to submit a Summary Report, prepared according to the standards outlined in 950 CMR 70.14 by: February 2023

4. The specimens recovered during performance of the proposed field investigation will be curated at:

The Public Archaeology Laboratory, Inc.
26 Main Street
Pawtucket, Rhode Island 02860

SIGNATURE _____ 5/4/22
APPLICANT(S) DATE

Public Archaeology Laboratory

May 4, 2022

Brona Simon
State Historic Preservation Officer
State Archaeologist
Executive Director
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125

Re: New England Power Company – Line P142/O141 ACR and OPGW Installation – Sterling to Millbury, MA
Project Notification Form, Due Diligence, and Intensive Archaeological Survey Permit Application
MHC #RC.66433; PAL #4131.01

Dear Ms. Simon:

On behalf of New England Power Company (NEP), enclosed please find a Project Notification Form (PNF) and a Cultural Resources Due Diligence Report prepared by The Public Archaeology Laboratory, Inc. (PAL) for the proposed Line P142/O141 Asset Condition Refurbishment (ACR) and OPGW Installation Project.

Also enclosed is an application for a permit to conduct an intensive (locational) archaeological survey. The Project area is located on the Clinton, Sterling, Shrewsbury, Worcester North, Worcester South, and Grafton, MA USGS Topographic maps. We would like to begin investigations as soon as possible. Thank you in advance for your time and attention to this matter.

We are providing the enclosed documentation to Native American Tribes and the Massachusetts Board of Underwater Archaeological Resources (MBUAR) for their review, pursuant to requirements in the USACE Massachusetts General Permit. If you have any questions or require additional information, please do not hesitate to contact Gregory R. Dubell, Energy Projects Manager, or John Kelly, Principal Investigator, at your convenience.

Sincerely,

Deborah C. Cox, RPA
President

Enclosures

cc: Erin Whoriskey, NEP (w/ encl. – via email)
Michael Retter, NEP (w/ encl. – via email)
Daniel Herzlinger, TRC (w/encl. – via email)
David Robinson, MBUAR (w/encl. – via email)
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email)
Mark Andrews, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email)
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John Brown, III, Narragansett Indian Tribe (w/encl. – via email)
Cora Peirce, Narragansett Indian Tribe (w/encl. – via email)
Cheryl Holley, Nipmuc Indian Nation (w/encl. – via email)
Rae Gould, Nipmuc Indian Nation (w/encl. – via email)

**950 CMR: DEPARTMENT OF THE STATE SECRETARY**

**APPENDIX B**
**COMMONWEALTH OF MASSACHUSETTS**

**SECRETARY OF STATE: MASSACHUSETTS HISTORICAL COMMISSION**

**PERMIT APPLICATION: ARCHAEOLOGICAL FIELD INVESTIGATION**

## A. General Information

Pursuant to Section 27(c) of Chapter 9 of the General Laws and according to the regulations outlined in 950 CMR 70.00, a permit to conduct a field investigation is hereby requested.

1. Name(s): John M. Kelly

2. Institution: The Public Archaeology Laboratory, Inc.

   Address: 26 Main Street
   Pawtucket, Rhode Island 02860

3. Project Location: Lines P142/O141 Asset Condition Refurbishment & OPGW Installation Project
   *see attached proposal*

4. Town(s): Sterling, West Boylston, Boylston, Shrewsbury, Grafton, Millbury, and Worcester

5. Attach a copy of a USGS quadrangle with the project area clearly marked.

   *see attached*

6. Property Owner(s): New England Power Company

7. The applicant affirms that the owner has been notified and has agreed that the applicant may perform the proposed field investigation.

8. The proposed field investigation is for a(n):

   a. Reconnaissance Survey
   **b. Intensive Survey**
   c. Site Examination
   d. Data Recovery

## B. Professional Qualifications

1. Attach a personnel chart and project schedule as described in 950 CMR 70.11 (b).

**a. Personnel**

| | |
|---|---|
| Principal Investigator(s): | John M. Kelly |
| Project Archaeologist(s): | John M. Kelly |
| Field Crew: | TBD |

**b. Schedule**

| | |
|---|---|
| Fieldwork: | June 2022 |
| Laboratory: | July 2022 |
| Report: | August 2022 |

2. Include copies of curriculum vitae of key personnel (unless already on file with the State Archaeologist).

## C. Research Design

1. Attach a narrative description of the proposed Research Design according to the requirements of 950 CMR 70.11.

2. The Applicant agrees to perform the field investigations according to the standards outlined in 950 CMR 70.13.

3. The Applicant agrees to submit a Summary Report, prepared according to the standards outlined in 950 CMR 70.14 by: November 2022

4. The specimens recovered during performance of the proposed field investigation will be curated at:

The Public Archaeology Laboratory, Inc.
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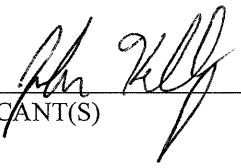
SIGNATURE  5/4/22

APPLICANT(S) DATE

# The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

## PERMIT TO CONDUCT ARCHAEOLOGICAL FIELD INVESTIGATION

Permit Number 4198 Date of Issue July 6, 2022

Expiration Date July 6, 2023

PAL is hereby authorized to conduct an archaeological field investigation pursuant to Section 27C of Chapter 9 of General Laws and according to the regulations outlined in 950 CMR 70.00.

New England Power Co. Lines 313/343 Asset Condition Refurbishment and Optical Ground Wire Project, Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Grafton, and Millbury

Project Location

Brona Simon

Brona Simon, State Archaeologist
Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc

Public Archaeology Laboratory

August 4, 2023

Brona Simon
State Archaeologist and State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125

Attn: Edward L. Bell

Re: NEP, Line 313/343 and Line P142/O141 ACR and OPGW Installation, Ayer to Millbury, MA
Amendment to Intensive (Locational) Archaeological Survey Permits
MHC #RC.66433, RC.71519; PAL #4120.02, 4131.01

Dear Ms. Simon:

On behalf of New England Power Company (NEP), The Public Archaeology Laboratory, Inc. (PAL) is requesting an amendment to State Archaeologist's Permit Nos. 4198 and 4204 to conduct additional intensive (locational) archaeological survey for the proposed Line 313/343 ACR and OPGW Installation and Line P142/O141 ACR and OPGW Installation Projects. NEP had originally proposed to conduct work on Lines 313/343 and P142/O141 under separate projects but has since decided to combine the proposed work on these lines into one project, as the lines are co-located in the same right-of-way (ROW).

The additional survey for Lines 313/343 and P142/O141 accounts for access road improvement areas and added pull pad locations beyond what was previously proposed in PAL's permit requests on July 29, 2022. The survey of the proposed access road improvement areas will cover areas that were not tested during prior surveys of the ROW and areas that do not completely overlap with work pads and/or pull pads for structure replacements. Enclosed please find updated Project mapping and tables identifying the specific work areas where PAL proposes additional testing. The intensive survey will be completed in accordance with the methodologies presented in the permit applications for the previously separated projects, and the results will be presented in a combined technical report that will include the results of testing completed under the original permits. We will include updated maps depicting all the archaeological testing in the technical report.

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

26 Main Street Pawtucket, RI 02860 | 401.728.8780 Main | 401.728.8784 Fax
palinc.com

cc: Erin Whoriskey, NEP (w/ encl. – via email)
Michael Retter, NEP (w/encl. – via email)
Daniel Herzlinger, TRC (w/encl. – via email)
Michael S. Wierbonics, U.S. Army Corps of Engineers (w/encl. – via email)
David Robinson, MBUAR (w/encl. – via email)
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Cheryl Holley, Nipmuc Indian Nation (w/encl. – via email)
Rae Gould, Nipmuc Indian Nation (w/encl. – via email)

**Table 1. Proposed Testing for Archaeologically Sensitive Access Road Improvement Areas Requiring Ground Disturbance Along the ROW.**

| Map Page No. | Access Road | Town/City | Proposed Work | Archaeological Sensitivity | Proposed Test Pits |
|---|---|---|---|---|---|
| 2 | To P142 STR 181 | Millbury | Type 1 or 2 Upgrades | Moderate | 2 |
| 3 | To P142 STR 178 | Millbury | Type 1 or 2 Upgrades | High | 2 |
| 3 | To P142 STR 176 | Millbury | Type 1 or 2 Upgrades | High | 2 |
| 4 | To P142 STR 174 | Millbury | Type 1 or 2 Upgrades | High | 2 |
| 5-6 | Silver Fox Dr to 313 STR 25 | Millbury | Type 1 or 2 Upgrades | Moderate | 24 |
| 8-9 | Creeper Hill Rd to 313 STR 40 | Grafton/ Shrewsbury | Refresh Stone/ Type 1 or 2 Upgrades | High/Low | 8 |
| 10 | Arrowwood Dr to P142 STR 149 | Shrewsbury | Type 1 or 2 Upgrades | Moderate | 8 |
| 10 | Abby Ln to 313 STR 46 | Shrewsbury | Construct New Access Road | Moderate | 15 |
| 10-11 | Grove St to 313 STR 49 | Shrewsbury | Type 1 or 2 Upgrades | Moderate | 15 |
| 11-12 | Lake St to Oak St | Shrewsbury | Refresh Stone/ Type 1 or 2 Upgrades | Moderate/Low | 30 |
| 14 | Beach Rd to P142 STR 130 | Shrewsbury | Type 1 or 2 Upgrades | High/Moderate/Low | 5 |
| 15 | Millwood Dr to 313 STR 66 | Shrewsbury | Type 1 or 2 Upgrades | Moderate | 6 |
| 15 | Manor Rd to Main St | Shrewsbury | Type 1 or 2 Upgrades | Moderate | 20 |
| 20 | Nicholas Ave to P142 STR 105 | Boylston | Type 1 or 2 Upgrades | Moderate | 5 |
| 20-21 | Main St to Paul X Tivnan Dr | Boylston | Type 5 Upgrades/ Type 1 or 2 Upgrades | Moderate | 34 |
| 25 | Temple St to P142 STR 79 | West Boylston | Type 1 or 2 Upgrades | Moderate | 5 |
| 26-27 | Wachusett Substation to Sterling St | West Boylston | Type 1 or 2 Upgrades | High/Moderate/Low | 45 |
| 28 | 313 STR 126 to Lancaster St | West Boylston | Type 1 or 2 Upgrades | Moderate/Low | 6 |
| 29 | Lancaster St to 313 STR 129 | West Boylston | Type 1 or 2 Upgrades | Moderate | 18 |
| 29-30 | Lancaster St to Fairbanks St | West Boylston | Type 1 or 2 Upgrades | Moderate/Low | 110 |
| 30-31 | 313 STR 138 to 313 STR 139 | West Boylston | Type 1 or 2 Upgrades | Moderate/Low | 6 |
| 30-32 | Fairbanks St to Campground Rd | West Boylston/ Sterling | Type 1 or 2 Upgrades | Moderate/Low | 42 |

| Map Page No. | Access Road | Town/City | Proposed Work | Archaeological Sensitivity | Proposed Test Pits |
|---|---|---|---|---|---|
| 32-33 | Campground Rd to 313 STR 150 | Sterling | Type 1 or 2 Upgrades | Moderate/Low | 8 |
| 34 | Wyman Way to 313 STR 153 & P142 STR 38 | Sterling | Type 1 or 2 Upgrades | High/Low | 34 |
| 34-35 | 313 STR 155 to Kendall Hill Rd | Sterling | Type 5 Upgrades/ Type 1 or 2 Upgrades | Moderate/Low | 10 |
| 35-36 | Kendall Hill Rd to 313 STR 165 | Sterling | Type 1 or 2 Upgrades | High/Moderate | 86 |
| 36 | Maple St to 313 STR 166 & P142 STR 28 | Sterling | Type 1 or 2 Upgrades | Moderate | 10 |
| 36-37 | Maple St to Redstone Hill Rd | Sterling | Type 1 or 2 Upgrades | High/Moderate | 115 |
| 38-39 | Redstone Hill Rd to Clinton Rd | Sterling | Type 1 or 2 Upgrades | Moderate/Low | 50 |
| 40-41 | Pratts Junction Rd to I-190 | Sterling | Type 1 or 2 Upgrades | Moderate/Low | 6 |
| 41 | Turtle Ln to P142 STR 7 | Sterling | Refresh Stone/ Type 1 or 2 Upgrades | Moderate | 10 |
| 50 | 313 STR 228 to 313 STR 231 | Lancaster | Fill Ruts/ Type 1 or 2 Upgrades | High/Moderate | 38 |
| 51-52 | Fort Pond Rd to Chisholm Trail | Lancaster | Type 1 or 2 Upgrades | Moderate/Low | 25 |
| 60-61 | 313 STR 277 to 313 STR 278 | Shirley | Type 1 or 2 Upgrades | Moderate | 15 |
| 69-70 | Hibiscus Ln to Loon Hill Rd | Ayer | Refresh Stone/ Type 1 or 2 Upgrades | Moderate | 38 |
| 79 | Paul X Tivnan Dr to P142 STR 5 | West Boylston | Type 1 or 2 Upgrades | High | 42 |
| **Total** | | | | | **897** |

**Table 2. Proposed Testing for Added Archaeologically Sensitive Pull Pads Along the ROW.**

| Map Page No. | Pull Pad | Line | Town/City | Archaeological Sensitivity | Proposed Test Pits |
|---|---|---|---|---|---|
| 10 | 44PN | 313/343 | Shrewsbury | Moderate | 6 |
| 14 | 62PN | 313/343 | Shrewsbury | Moderate | 6 |
| 27 | 70P | P142/O141 | West Boylston | High | 6 |

| Map Page No. | Pull Pad | Line | Town/City | Archaeological Sensitivity | Proposed Test Pits |
|---|---|---|---|---|---|
| 29 | 130PS | 313/343 | West Boylston | Moderate | 6 |
| 31 | 54PN | P142/O141 | West Boylston | Moderate | 6 |
| 32 | 147PS | 313/343 | Sterling | Moderate | 6 |
| 37 | 23PS | P142/O141 | Sterling | High | 6 |
| 37 | 23PN | P142/O141 | Sterling | High | 4 |
| 40 | 9P | P142/O141 | Sterling | Moderate | 6 |
| **Total** | | | | | **52** |

# The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

## PERMIT TO CONDUCT ARCHAEOLOGICAL FIELD INVESTIGATION

Permit Number 4204 Date of Issue August 8, 2022

Expiration Date August 8, 2023

PAL is hereby authorized to conduct an archaeological field investigation pursuant to Section 27C of Chapter 9 of General Laws and according to the regulations outlined in 950 CMR 70.00.

New England Power Co. Line P142/0141 Asset Condition Refurbishment & Optical Groundwire Installation, Sterling, West Boylston, Boylston, Shrewsbury, Grafton, Millbury, & Worcester

Project Location

Brona Simon

Brona Simon, State Archaeologist
Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc

# The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

August 17, 2023

Deborah Cox
President
PAL
26 Main Street
Pawtucket, RI 02860

Attn. John M. Kelly

RE: New England Power Company Line 313/314 Asset Condition Refurbishment and Optical Groundwire Installation, Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Grafton, and Millbury, MA. MHC #RC.71519. **PAL #4120.02.**

and

RE: New England Power Company Line P142/O141 Asset Condition Refurbishment and Optical Groundwire Installation, Sterling, West Boylston, Boylston, Shrewsbury, Grafton, Millbury, and Worcester, MA. (Formerly MHC #RC.66433.) **PAL #4131.01.**

Dear Deborah:

Staff of the Massachusetts Historical Commission (MHC), office of the State Historic Preservation Officer, have reviewed the information that you provided on the projects referenced above.

The information provided indicates that New England Power Company has decided to combine the proposed work on Lines 313/314 and P142/O141 as a single project.

In future submittals to the MHC, please reference MHC #RC.71519.

MHC's staff have reviewed the request to amend State Archaeologist's Permits #4198 and #4204 for additional intensive (locational) archaeological survey.

State Archaeologist's Permits #4198 and #4204 have been amended for the project changes and extended to expire on August 17, 2024.

These comments are offered to assist in compliance with 950 CMR 70. If you have any questions, please contact Ed Bell of my staff.

Sincerely,

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc

# Appendix F: Environmental Justice Screening Form

# Environmental Justice Screening Form

| | |
|---|---|
| Project Name | Access Road Improvement Project |
| Anticipated Date of MEPA Filing | Expanded Environmental Notification (EENF) Form will be filed by November 30, 2023 |
| Proponent Name | New England Power Company (NEP) |
| Contact Information (e.g., consultant) | Dan Herzlinger, TRC Companies, Inc.<br>6 Ashley Drive, 1st Floor<br>Scarborough, ME 04074<br>978-935-8065 |
| Public website for project or other physical location where project materials can be obtained (if available) | www. centralmassreliability.com |
| Municipality and Zip Code for Project (if known) | Ayer (01432), Shirley (01464), Lancaster (01523), Sterling (01564), West Boylston (01583), Boylston (01505), Shrewsbury (01545), Worcester (01608), Grafton (01519) and Millbury (01527) |
| Project Type* (list all that apply) | Energy Transmission - Access Road Improvements within Existing Rights of Way |
| Is the project site within a mapped 100-year FEMA flood plain? Y/N/ unknown | Yes, in short segments of Rights-of-Way scattered along the project length |
| Estimated GHG emissions of conditioned spaces (click **here** for GHG Estimation tool) | Not applicable – No buildings are proposed as part of this project. |

Project Description

1. Provide a brief project description, including overall size of the project site and square footage of proposed buildings and structures if known.

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.

In addition to providing long-term, safe and reliable access, the access road improvements will be utilized to immediately support three separate NEP maintenance projects within this ROW which are: Line P142/O141 Flyover Switch Project which involves the installation of switch structures, Line P142/O141 Asset Condition Refurbishment (ACR) Project which involves replacing structures and Optical Ground Wire (OPGW), and Line 313/343 ACR Project which involves replacing structures and installing OPGW in two phases.

Upgrades to existing access roads and the construction of new and permanent work pads will be

necessary and will occur within the existing utility ROW in order to provide safe and reliable access. NEP is proposing to perform these improvements at one time in order to provide cost efficiencies to our customers, reduce abutter disruption and minimize regulatory and administrative burden. NEP will include the impacts from the three maintenance projects in the EENF. No significant tree clearing, or expansion of the ROW is proposed as part of this project.

2. List anticipated MEPA review thresholds (301 CMR 11.03) (if known)

The transmission line work on the projects is exempt under the Wetlands Protection Act and MEPA for utility maintenance and replacement. However, the upgrades to existing access roads and construction of new and permanent work pads is not exempt.

**ENF and Other Review:**

- 301 CMR 11.03(1)(b)(1) – 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(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(11)(b) – Any Project of ½ or more acres within a designated ACEC, unless the Project consists solely of one single family dwelling.

3. List all anticipated state, local and federal permits needed for the project (if known)

| Agency | Permit, Review, or Approval |
|---|---|
| **Federal** | |
| U.S. Army Corps of Engineers (USACE) | Section 404 Pre-Construction Notification Permit and consultations under Section 106 of National Historic Preservation Act and Section 7 of the Endangered Species Act |
| United States Environmental Protection Agency (EPA) | National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges and Construction Dewatering Activities/Stormwater Pollution Prevention Plan (SWPPP) |
| **State** | |
| Executive Office of Energy and Environmental Affairs (EEA) | MEPA Review/Certificate of the Secretary |
| Massachusetts Department of Environmental Protection (MassDEP) | Section 401 Comprehensive Water Quality Certificate |
| Department of Conservation and Recreation (DCR) | Construction Access Permit |
| Natural Heritage and Endangered Species Program (NHESP) | Conservation Management Permit |
| **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 (MA WPA) |

| |
|---|
| 4. Identify EJ populations and characteristics (Minority, Income, English Isolation) within 5 miles of project site (can attach map identifying 5-mile radius from EJ Maps Viewer in lieu of narrative)<br><br>See **Attachment A** |
| 5. Identify any municipality or census tract meeting the definition of "vulnerable health EJ criteria" in the DPH EJ Tool located in whole or in part within a 1 mile radius of the project site<br><br>**See Attachment B.** |

6. Identify potential short-term and long-term environmental and public health impacts that may affect EJ Populations and any anticipated mitigation

The EJ Populations within 1-mile radius of the ROW (the Designated Geographic Area for the Project) are shown in **Attachment C.**

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. Construction mats are typically comprised of wooden beams, bolted together, and are typically 4 ft wide by 16 ft 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. In addition, Best Management Practices, 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 Best Management Practices, 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 Massachusetts Department of Conservation and Recreation (DCR). Since Project activities will be limited to the existing ROW, access to Protected Land and Open Space within EJ Populations will not be impacted.

**Noise:**
The EJ communities that are most likely to have temporary noise impacts are the communities that are directly within or are located near the ROW. Noise impacts associated with construction-period activities are temporary in nature and expected to be minimal as work progresses along the transmission lines. 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.

**Traffic:**
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 off town roadways. 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.

7. Identify project benefits, including "Environmental Benefits" as defined in 301 CMR 11.02, that may improve environmental conditions or public health of the EJ population

Potential "Environmental Benefits" include the following:

- Increased resiliency of the overall bulk transmission line system. By installing improved foundations, new switch structures and upgraded replacement structures, this infrastructure will be better suited to withstand strong winds and storm events, as a result of climate change.
- 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 of this project that are not expressly included under the definition of "Environmental Benefits" consist of the following:

- Reduce overall 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 New England Power Company's customers. The three project construction schedules are being coordinated so all of the work can be completed in series.
- The replacement of the structures and 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. Replacing infrastructure like the 313/343 & P142/O141 Lines helps to accomplish this goal.

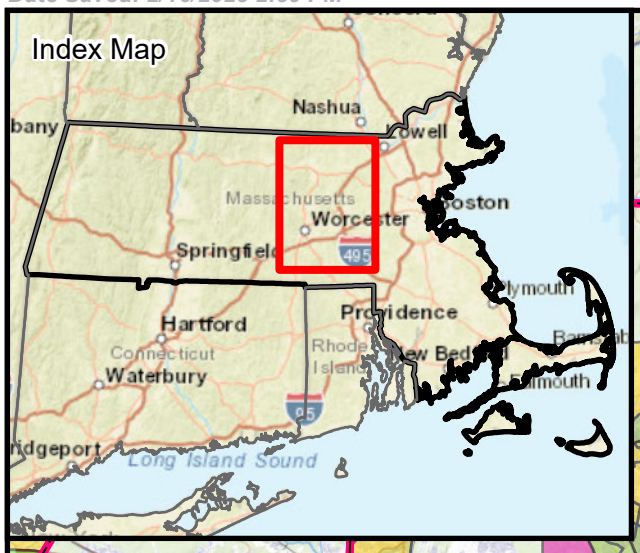
8. Describe how the community can request a meeting to discuss the project, and how the community can request oral language interpretation services at the meeting. Specify how to request other accommodations, including meetings after business hours and at locations near public transportation.

Communities and members of the public can access information related to the project in the following ways:

- A public website, www.centralmassreliability.com, provides information about the projects and will be updated with information on project timelines and other information as it becomes available. The website will be translated into Spanish, Brazilian Portuguese, Cape Verdean (aka Spanish and Portuguese Creole) and Chinese.
- The website contains a toll-free number and email address which are directed to the outreach team at NEP for follow up.
- A virtual informational meeting hosted by NEP was held on March 23, 2023:
    - The EJ Reference List will receive information related to this meeting via email.
    - Notifications (including translated) of this virtual meeting was posted in the appropriate newspaper(s) with circulations to each municipality prior to the meeting date.
- Hard copies of project materials will be made available at municipal libraries and/or town halls or transfer stations.
- A copy of the project factsheet will be posted at the Spanish American Center in Leominster at their request.
- Upon request, in person project information meetings will be scheduled at convenient locations along the project routes as the projects progress.
- If you have additional questions, please contact 844-313-3437 or email us at info@centralmassreliability.com

Recipients of this form include organizations on the EJ Reference List provided by Massachusetts

Executive Office of Energy and Environmental Affairs per the Public Involvement Protocol as well as Agency and Other Reviewers.




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

**Legend**

- O141
- O141S
- O141S/P142
- O141S/P142S
- O141W
- O142/O141W
- P142N/O141N
- P142S
- Proposed Connection - Line O141/P142
- Line 313
- Line 343
- One- and Five-Mile Radii Around Lines
- 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



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

**Attachment B: 313/343 & O141/P142 ACR Vulnerable Health EJ Criteria (1-mile)**

| Municipality | EJ and Vulnerable Health EJ Criteria Status | Vulnerable Health Topic EJ Criteria Met | Statewide Rate per 1000 |
|---|---|---|---|
| Ayer | Meets at least one Vulnerable Health EJ Criteria | Heart Attack Rate per 10,000 | 41 |
| Boylston | Does not meet any Vulnerable Health EJ Criteria | N/A | N/A |
| Grafton | Does not meet any Vulnerable Health EJ Criteria | N/A | N/A |
| Lancaster | Does not meet any Vulnerable Health EJ Criteria | N/A | N/A |
| Millbury | Does not meet any Vulnerable Health EJ Criteria | N/A | N/A |
| Shirley | Meets at least one Vulnerable Health EJ Criteria | Heart Attack Rate per 10,000 | 35 |
| Shrewsbury | Does not meet any Vulnerable Health EJ Criteria | N/A | N/A |
| Sterling | Does not meet any Vulnerable Health EJ Criteria | N/A | N/A |

| | | | |
|---|---|---|---|
| West Boylston | Does not meet any Vulnerable Health EJ Criteria | N/A | N/A |
| Worcester | Meets at least one Vulnerable Health EJ Criteria | Lead Poisoning Rate per 1,000<br>Low Birth Weight Rate per 1,000<br>Pediatric Asthma Ed Visits Rate per 10,000 | 22<br>261<br>136 |

**Attachment C: 313/343 & O141/P142 ACR Project**
**Massachusetts Department of Public Health (DPH) EJ Communities (1-Mile)**

| Municipality | Geographic Area Name | EJ Criteria Description | Block Group | Minority Population (%) | Median Income | Percent of MA Median Income (%) |
|---|---|---|---|---|---|---|
| Ayer | Block Group 1, Census Tract 3251.01, Middlesex County | Minority | 1 | 27.17 | $82,857 | 98.19 |
| Ayer | Block Group 1, Census Tract 3251.02, Middlesex County | Income | 1 | 18.65 | $52,120 | 61.76 |
| Ayer | Block Group 4, Census Tract 3251.02, Middlesex County | Minority | 4 | 29.37 | $81,500 | 96.58 |
| Ayer | Block Group 5, Census Tract 3251.02, Middlesex County | Minority | 5 | 39.61 | $68,462 | 81.13 |
| Shirley | Block Group 2, Census Tract 3882, Middlesex County | Minority | 2 | 41.12 | $69,342 | 82.17 |
| Leominster | Block Group 1, Census Tract 7092.03, Worcester County | Minority | 1 | 31.19 | $120,833 | 143.19 |
| Leominster | Block Group 1, Census Tract 7092.04, Worcester County | Minority | 1 | 43.82 | $92,567 | 109.70 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Leominster | Block Group 3, Census Tract 7092.04, Worcester County | Minority | 3 | 30.41 | $87,559 | 103.76 |
| Lancaster | Block Group 4, Census Tract 7131, Worcester County | Minority | 4 | 36.04 | $108,676 | 128.79 |
| Worcester | Block Group 1, Census Tract 7301, Worcester County | Minority | 1 | 40.74 | $104,228 | 123.51 |
| Worcester | Block Group 2, Census Tract 7301, Worcester County | Minority | 2 | 34.68 | $76,351 | 90.48 |
| Worcester | Block Group 3, Census Tract 7301, Worcester County | Minority | 3 | 39.76 | $79,926 | 94.72 |
| Worcester | Block Group 4, Census Tract 7301, Worcester County | Minority | 4 | 37.69 | $60,430 | 71.61 |
| Worcester | Block Group 1, Census Tract 7302, Worcester County | Minority | 1 | 36.09 | $107,574 | 127.48 |
| Worcester | Block Group 2, Census Tract 7302, Worcester County | Minority | 2 | 44.44 | $55,938 | 66.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Block Group 3, Census Tract 7302, Worcester County | Minority, income and English isolation | 3 | 25.36 | $44,681 | 52.95 |
| Worcester | Block Group 5, Census Tract 7302, Worcester County | Minority | 5 | 26.31 | $68,917 | 81.67 |
| Worcester | Block Group 1, Census Tract 7303, Worcester County | Minority | 1 | 39.38 | $55,733 | 66.05 |
| Worcester | Block Group 2, Census Tract 7303, Worcester County | Minority | 2 | 40.54 | $79,118 | 93.76 |
| Worcester | Block Group 3, Census Tract 7303, Worcester County | Minority | 3 | 25.48 | $87,625 | 103.84 |
| Worcester | Block Group 4, Census Tract 7303, Worcester County | Minority | 4 | 39.07 | $55,682 | 65.99 |
| Worcester | Block Group 5, Census Tract 7303, Worcester County | Minority | 5 | 31.68 | $87,656 | 103.88 |
| Worcester | Block Group 1, Census Tract 7304.01, Worcester County | Minority | 1 | 40.48 | $67,969 | 80.55 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Block Group 2, Census Tract 7304.01, Worcester County | Minority | 2 | 32.21 | $87,875 | 104.14 |
| Worcester | Block Group 3, Census Tract 7304.01, Worcester County | Minority and income | 3 | 75.44 | $31,365 | 37.17 |
| Worcester | Block Group 1, Census Tract 7304.02, Worcester County | Minority and income | 1 | 52.94 | $54,875 | 65.03 |
| Worcester | Block Group 2, Census Tract 7304.02, Worcester County | Minority | 2 | 69.64 | $61,607 | 73.01 |
| Worcester | Block Group 1, Census Tract 7305, Worcester County | Minority and income | 1 | 42.03 | $49,046 | 58.12 |
| Worcester | Block Group 2, Census Tract 7305, Worcester County | Minority | 2 | 70.51 | $59,375 | 70.36 |
| Worcester | Block Group 3, Census Tract 7305, Worcester County | Minority and income | 3 | 41.78 | $44,125 | 52.29 |
| Worcester | Block Group 2, Census Tract 7306, Worcester County | Income | 2 | 21.69 | $17,179 | 20.36 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Block Group 5, Census Tract 7306, Worcester County | Minority and income | 5 | 24.91 | $34,952 | 41.42 |
| Worcester | Block Group 1, Census Tract 7316.01, Worcester County | Minority and income | 1 | 48.36 | $17,012 | 20.16 |
| Worcester | Block Group 5, Census Tract 7316.01, Worcester County | Minority and income | 5 | 41.82 | $44,145 | 52.31 |
| Worcester | Block Group 1, Census Tract 7316.02, Worcester County | Minority and income | 1 | 34.71 | $45,135 | 52.58 |
| Worcester | Block Group 2, Census Tract 7316.02, Worcester County | Minority, income and English isolation | 2 | 34.35 | $25,921 | 30.72 |
| Worcester | Block Group 2, Census Tract 7317, Worcester County | Minority and income | 2 | 46.12 | $34,856 | 41.31 |
| Worcester | Block Group 1, Census Tract 7318.01, Worcester County | Minority and income | 1 | 44.13 | $47,208 | 55.94 |
| Worcester | Block Group 2, Census Tract 7318.01, Worcester County | Minority, income and English isolation | 2 | 50.43 | $15,176 | 17.98 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Block Group 2, Census Tract 7318.02, Worcester County | Minority, income and English isolation | 2 | 91.93 | $11,543 | 13.68 |
| Worcester | Block Group 3, Census Tract 7318.02, Worcester County | Minority | 3 | 77.00 | $97,885 | 114.03 |
| Worcester | Block Group 1, Census Tract 7319, Worcester County | Minority and income | 1 | 68.79 | $33,804 | 40.06 |
| Worcester | Block Group 2, Census Tract 7319, Worcester County | Minority and income | 2 | 70.71 | $53,375 | 63.25 |
| Worcester | Block Group 3, Census Tract 7319, Worcester County | Minority and income | 3 | 74.53 | $43,646 | 51.72 |
| Worcester | Block Group 4, Census Tract 7319, Worcester County | Minority and income | 4 | 71.39 | $37,429 | 44.36 |
| Worcester | Block Group 1, Census Tract 7320.01, Worcester County | Minority, income and English isolation | 1 | 85.17 | $15,718 | 18.63 |
| Worcester | Block Group 2, Census Tract 7320.01, Worcester County | Minority and income | 2 | 73.48 | $30,000 | 35.55 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Block Group 1, Census Tract 7320.02, Worcester County | Minority | 1 | 62.88 | $65,965 | 78.17 |
| Worcester | Block Group 2, Census Tract 7320.02, Worcester County | Minority | 2 | 39.74 | $60,893 | 72.16 |
| Worcester | Block Group 3, Census Tract 7320.02, Worcester County | Minority | 3 | 33.37 | $67,188 | 79.62 |
| Worcester | Block Group 1, Census Tract 7322.01, Worcester County | Minority and income | 1 | 35.56 | $45,224 | 53.59 |
| Worcester | Block Group 2, Census Tract 7322.01, Worcester County | Minority | 2 | 47.57 | $76,250 | 90.36 |
| Worcester | Block Group 1, Census Tract 7322.02, Worcester County | Minority and income | 1 | 41.89 | $51,163 | 60.63 |
| Worcester | Block Group 2, Census Tract 7322.02, Worcester County | Minority | 2 | 38.89 | $92,344 | 109.43 |
| Worcester | Block Group 1, Census Tract 7322.03, Worcester County | Minority and English isolation | 1 | 56.73 | $75,401 | 89.35 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Block Group 2, Census Tract 7322.03, Worcester County | Minority and English isolation | 2 | 51.76 | $68,902 | 81.65 |
| Worcester | Block Group 3, Census Tract 7322.03, Worcester County | Minority and income | 3 | 68.75 | $39,732 | 47.08 |
| Worcester | Block Group 1, Census Tract 7323.01, Worcester County | Minority | 1 | 42.72 | $61,607 | 73.01 |
| Worcester | Block Group 2, Census Tract 7323.01, Worcester County | Minority | 2 | 35.12 | $68,795 | 81.53 |
| Worcester | Block Group 1, Census Tract 7323.02, Worcester County | Minority and income | 1 | 56.12 | $39,207 | 46.46 |
| Worcester | Block Group 2, Census Tract 7323.02, Worcester County | Minority | 2 | 46.02 | $77,561 | 91.91 |
| Worcester | Block Group 1, Census Tract 7328.01, Worcester County | Minority | 1 | 32.93 | $77,821 | 92.22 |
| Worcester | Block Group 2, Census Tract 7328.01, Worcester County | Minority | 2 | 42.81 | $70,766 | 83.86 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Block Group 1, Census Tract 7328.02, Worcester County | Minority | 1 | 41.79 | $63,676 | 75.46 |
| Millbury | Block Group 1, Census Tract 7372, Worcester County | Income | 1 | 16.65 | $53,875 | 63.84 |
| Millbury | Block Group 2, Census Tract 7372, Worcester County | Income | 2 | 13.73 | $53,375 | 63.25 |
| Shrewsbury | Block Group 2, Census Tract 7391.01, Worcester County | Minority | 2 | 32.05 | $72,425 | 85.83 |
| Shrewsbury | Block Group 3, Census Tract 7391.01, Worcester County | Minority | 3 | 44.44 | $131,200 | 155.48 |
| Shrewsbury | Block Group 1, Census Tract 7391.02, Worcester County | Minority | 1 | 57.23 | $148,523 | 176.01 |
| Shrewsbury | Block Group 2, Census Tract 7391.02, Worcester County | Minority | 2 | 58.24 | $100,313 | 118.88 |
| Shrewsbury | Block Group 1, Census Tract 7392.01, Worcester County | Minority | 1 | 35.00 | $80,756 | 95.70 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Shrewsbury | Block Group 2, Census Tract 7392.01, Worcester County | Minority | 2 | 52.80 | $74,873 | 88.73 |
| Shrewsbury | Block Group 1, Census Tract 7392.02, Worcester County | Minority | 1 | 40.31 | $94,946 | 112.52 |
| Shrewsbury | Block Group 2, Census Tract 7392.02, Worcester County | Minority | 2 | 40.02 | $92,500 | 109.62 |
| Shrewsbury | Block Group 2, Census Tract 7393, Worcester County | Minority | 2 | 38.18 | $85,625 | 101.47 |
| Shrewsbury | Block Group 4, Census Tract 7395, Worcester County | Minority | 4 | 29.78 | $114,198 | 135.33 |
| Harvard | Block Group 2, Census Tract 7614.02, Worcester County | Minority | 2 | 47.70 | $133,594 | 158.31 |

# Formulario de evaluación de justicia ambiental

| | |
|---|---|
| Nombre del proyecto | Proyecto de mejoramiento a caminos de acceso |
| Fecha prevista de presentación ante MEPA | Se presentará el Formulario de Notificación Ambiental Expandido (EENF) antes del 30 de Noviembre de 2023 |
| Nombre del proponente | New England Power Company (NEP) |
| Información de contacto (p. ej., consultor) | Dan Herzlinger, TRC Companies, Inc.<br>6 Ashley Drive, 1st Floor<br>Scarborough, ME 04074<br>978-935-8065 |
| Sitio web público para el proyecto u otra ubicación física donde se pueden obtener materiales del proyecto (si está disponible) | www. centralmassreliability.com |
| Municipio y código postal del proyecto (si se conoce) | Ayer (01432), Shirley (01464), Lancaster (01523), Sterling (01564), West Boylston (01583), Boylston (01505), Shrewsbury (01545), Worcester (01608), Grafton (01519) and Millbury (01527) |
| Tipo de proyecto* (indique todos los que correspondan) | Transmisión de energía - Mejoramiento a caminos de acceso dentro Derechos de paso existentes |
| ¿Se encuentra el sitio del proyecto dentro de un terreno inundable dentro de 100 años mapeado por la FEMA? S/N/Se desconoce | Sí, en segmentos cortos de Derechos de paso dispersos a lo largo del proyecto |
| Emisiones estimadas de GEI de los espacios acondicionados (haga clic **aquí** para acceder a la herramienta de estimación de GEI) | No aplica: no se propone construir edificios como parte de este proyecto. |

Descripción del proyecto

1. Proporcione una breve descripción del proyecto, incluido el tamaño total del sitio del proyecto y los pies cuadrados de los edificios y estructuras propuestos, si se conocen.

New England Power Company (NEP) propone realizar mejoramientos en los caminos de acceso dentro de los Derechos de paso para satisfacer las necesidades de acceso de varias líneas de transmisión en el centro de Massachusetts. El Derecho de paso es compartido por diez (10) líneas de transmisión de varios voltajes (345 kV, 115 kV y 69 kV) aunque no todas las líneas de transmisión atraviesan toda la longitud del Derecho de paso. El Derecho de paso es de aproximadamente 35.7 millas y corre generalmente en dirección suroeste a noreste entre Cross Street en Millbury y Westford Road en Ayer.

Además de brindar un acceso confiable, seguro y a largo plazo, los mejoramientos en las vías de acceso se utilizarán para apoyar de inmediato proyectos de mantenimiento de NEP diferentes que también están dentro de este Derecho de paso cuales son: Línea P142/O141 Proyecto de renovación de la condición de los bienes (ACR) que incluye el reemplazo de estructuras y alambre de tierra óptica (OPGW), y Línea 313/343 ACR Proyecto que consiste en la sustitución de estructuras e instalación de OPGW en dos fases.

Se realizarán mejoramientos a las vías de acceso existentes y la construcción de plataformas de trabajo nuevas y permanentes. Estos mejoramientos son necesarios y ocurrirán dentro del Derecho de paso de servicios públicos para proporcionar un acceso seguro y confiable. NEP está proponiendo realizar estos mejoramientos una vez al mismo tiempo para proporcionar eficiencias de costos a nuestros clientes, reducir interrupción a propiedades que abordan los caminos de acceso y minimizar la carga regulatoria y administrativa. NEP incluirá los impactos de los tres proyectos de mantenimiento en el EENF. Como parte de este proyecto, no se propone talar árboles de manera significativa ni expandir el Derecho de paso.

2. Indique los niveles de revisión anticipada de MEPA (301 CMR 11.03) (si se conocen).

El trabajo de la línea de transmisión en los proyectos está exento bajo la Ley de Protección de Humedales y MEPA para servicio de mantenimiento y reemplazo. Sin embargo, los mejoramientos a los caminos de acceso existentes y la construcción de las plataformas de trabajo nuevas y permanentes no están exentas.

**ENF y otros niveles de revisión:**

- 301 CMR 11.03(1)(b)(1) – Alteración directa de 25 o más acres de tierra, a menos que el Proyecto este consistente con un plan agrícola de conservación aprobado o un plan de tala de bosques u otro plan similar de prácticas agrícolas o forestales generalmente aceptadas.
- 301 CMR 11.03(2)(b)(2) – Más de dos acres de perturbación del hábitat prioritario designado, como se define en 321 CMR 10.02, que resulta en la captura de una especie amenazada o en peligro de extinción incluida en la lista estatal o una especie de preocupación especial.
- 301 CMR 11.03(11)(b) – Cualquier Proyecto de ½ o más acres dentro de un Área de Preocupación Ambiental Crítica (ACEC) designada, a menos que el Proyecto consiste únicamente de una vivienda unifamiliar.

3. Enumere todos los permisos estatales, locales y federales previstos necesarios para el proyecto (si se conocen).

| Agencia | Permiso, Revisión, o Aprobación |
|---|---|
| **Federal** | |
| Cuerpo de Ingenieros del Ejército de EE. UU. (USACE) | Sección 404 Permiso de notificación previa a la construcción y consultas bajo la Sección 106 de la Ley Nacional de Preservación Histórica y la Sección 7 de la Ley de especies en peligro de extinción (ESA) |
| Agencia de Protección Ambiental de Estados Unidos (EPA) | Sistema Nacional de Eliminación de Descargas de Contaminantes (NPDES)<br>Permiso General de Descargas de Aguas Pluviales y Construcción y Desagüe de Construcción<br><br>Actividades de drenaje/Plan de prevención de la contaminación por aguas pluviales (SWPPP) |
| **Estatal** | |
| Oficina Ejecutiva de Asuntos Energéticos y Ambientales (EEA) | Revisión de MEPA / Certificado del secretario |
| Departamento de Protección Ambiental de Massachusetts (MassDEP) | Artículo 401 Certificado Individual de Calidad de Agua; Variación de certificación de calidad del agua (WQC) |

| | | |
|---|---|---|
| Departamento de Conservación y Recreación (DCR) | Permiso de acceso para construcción | |
| Programa de Patrimonio Natural y Especies en Peligro de Massachusetts (NHESP) | Permiso de gestión de conservación | |
| **Local** | | |
| Comisiones de Conservación en Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton and Millbury. | Orden de Condiciones según la Ley de Protección de Humedales de Massachusetts (MA WPA) | |

4. Identifique las poblaciones y características de justicia ambiental (EJ) (minoría, ingresos, aislamiento inglés) dentro de las 5 millas del sitio del proyecto (puede adjuntar un mapa que identifique un radio de 5 millas desde la opción Visor de mapas de EJ en lugar de texto)

Consulte el **Anexo A.**

5. Identifique cualquier municipio o sección censal que cumpla con la definición de "criterios de población de EJ con salud vulnerable" en la Herramienta de EJ del Departamento de Salud Pública (DPH) ubicado en su totalidad o en parte dentro de un radio de 1 milla del sitio del proyecto.

Consulte el **Anexo B.**

6. Identifique los potenciales impactos a corto y largo plazo sobre el ambiente y la salud pública que pueden afectar a las poblaciones de EJ y cualquier mitigación prevista.

Las poblaciones de EJ dentro de un radio de 1 milla del derecho de vía (el área geográfica designada para el Proyecto) se muestran en el **Anexo C.**

Los impactos ambientales y de salud pública potenciales del Proyecto y la mitigación anticipada incluyen lo siguiente:

**Calidad del agua:**
El proyecto incorporará medidas protectoras y preventivas para minimizar y evitar impactos a la calidad del agua. El Derecho de paso cruza muchas áreas de humedales, arroyos y ríos, incluido el Embalse de Wachusett que sirve como suministro público de agua a las áreas a su alrededor. Para proteger la calidad del agua y estas áreas sensibles, se construirán caminos temporales utilizando esteras. Las esteras de construcción generalmente se componen de vigas de madera, unidas con pernos y son típicamente 4 pies de ancho por 16 pies de largo. Se colocan temporalmente sobre el suelo y la vegetación. Estas alfombras permiten que máquinas y vehículos pesados crucen áreas sensibles sin dañar el suelo o raíces de la vegetación y también se colocan de manera que no afecten el flujo de agua en los arroyos. Estas esteras se quitarán cuando se completa la construcción y se restaurarán los humedales. Además, las Mejores Prácticas de Gestión (BMP; Best Management Practices), como el uso de zarzos de paja, cercas de sedimentos, aguas pluviales características de gestión y otras medidas de control se utilizarán para evitar que tierra y otros materiales sean transportados a humedales y arroyos. Utilizando estas BMPs, cualquier impacto en la calidad del agua será insignificante y temporal y no se anticipa que causen impactos a la salud pública.

**Protección de tierras y espacios abiertos:**
El Proyecto atraviesa terrenos protegidos y áreas de espacios abiertos alrededor del embalse de Wachusett que son mantenidos por el Departamento de Conservación y Recreación de Massachusetts (DCR). Como las actividades del proyecto se limitarán al Derecho de paso existente, acceso a tierras protegidas y espacios abiertos dentro de poblaciones de EJ no serán afectadas.

**Ruido:**
Las comunidades de EJ que tienen más probabilidades de tener impactos temporales de ruido son las comunidades que están directamente dentro o están ubicados cerca del Derecho de paso. Impactos de ruido asociados con las actividades durante la construcción son de naturaleza temporal y se espera que sean mínimas a medida que avanza el trabajo a lo largo de las líneas de transmisión. Donde la construcción ocurrirá adyacente a las residencias, NEP notificará propietarios antes del inicio del trabajo. Las actividades generadoras de ruido se realizarán de acuerdo con los requisitos locales y estatales y no se anticipa que causen impactos a la salud pública.

**Tráfico:**
Los impactos al tráfico durante la construcción del proyecto serán menores e intermitentes. Se accederá a las áreas de trabajo principalmente desde las carreteras de la ciudad que sean propiedad de NEP o servidumbres de NEP. NEP obtendrá los permisos necesarios de MassDOT para el acceso. Una vez en el sitio, el tráfico de vehículos se limitará dentro o en las proximidades del Derecho de paso. Dado que el Derecho de paso es una instalación no tripulada, no habrá impactos permanentes en los patrones de tráfico o en el uso de las carreteras existentes y no se anticipan impactos en la salud pública como resultado de tráfico.

7. Identifique los beneficios del proyecto, incluidos los "beneficios ambientales", tal como se definen en 301 CMR 11.02, que pueden mejorar las condiciones ambientales o la salud pública de la población de EJ.

Los "beneficios ambientales" potenciales incluyen lo siguiente:

- Mayor resiliencia del sistema general de líneas de transmisión a granel. Al instalar cimientos mejorados, nuevas estructuras de interruptores y estructuras de reemplazo mejoradas, esta infraestructura estará mejor preparada para soportar fuertes vientos y tormentas, resultado del cambio climático.
- La instalación de OPGW permitirá una mejor comunicación entre subestaciones, resultando en mejor tiempo de respuesta durante emergencias e interrupciones relacionadas con tormentas, lo que aumenta la seguridad pública.

Otros beneficios de este proyecto que no están expresamente incluidos en la definición de "Ambiental Beneficios" consisten en lo siguiente:

- Reducir la perturbación general de los propietarios de terrenos adyacentes, las áreas de recursos de humedales y el hábitat de especies raras a lo largo del tiempo mediante la planificación para el futuro y la reducción de la probabilidad de que se repitan múltiples proyectos, lo que reduce los impactos ambientales y reduce los costos para los clientes de New England Power Company. Los horarios de construcción de los tres proyectos se están coordinando para que todo el trabajo se pueda completar en serie.
- El reemplazo de las estructuras y la instalación de OPGW tendrán el beneficio adicional de permitir que más recursos de energía renovable se conecten al sistema. Abordar el cambio climático requiere una gran expansión de las energías renovables y la infraestructura necesaria para apoyar y entregar esa energía. NEP está tomando medidas activamente para garantizar que su sistema esté listo para enfrentar este desafío crítico. Reemplazar infraestructura como las Líneas 313/343 y P142/O141 ayuda a lograr este objetivo.

8. Describa cómo la comunidad puede solicitar una reunión para analizar el proyecto y cómo la comunidad puede solicitar servicios de interpretación de lenguaje oral en la reunión. Especifique cómo solicitar otras adaptaciones, incluidas reuniones fuera del horario laboral y en lugares cercanos al transporte público.

Las comunidades y los miembros del público pueden acceder a la información relacionada con el proyecto en las siguientes maneras:

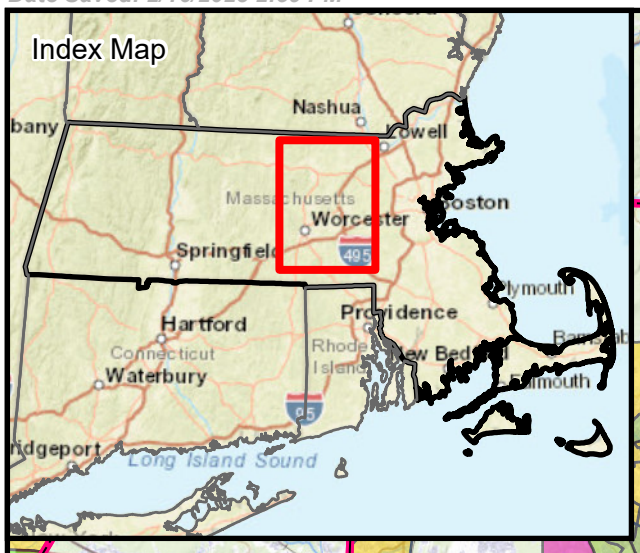
- Un sitio web público, www.centralmassreliability.com, proporciona información sobre los proyectos y se actualizará con información sobre los plazos de los proyectos y otra información a medida que esté disponible. El sitio web será traducido al español, portugués brasileño, caboverdiano (también conocido como criollo español y portugués) y chino.
- El sitio web contiene un número de teléfono y una dirección de correo electrónico que se dirigen al equipo de alcance público en NEP para seguimientos.
- Se programo una reunión informativa virtual organizada por NEP el 23 de marzo del 2023:
    - La Lista de referencia de EJ recibirá información relacionada con esta reunión por correo electrónico.
    - Las notificaciones (incluyendo las traducidas) de esta reunión virtual se publicarán en el periódico(s) apropiado(s) con circulaciones a cada municipio antes de la fecha de la reunión.
- Las copias impresas de los materiales del proyecto estarán disponibles en las bibliotecas municipales y/o ayuntamientos o estaciones de transferencia.
- Una copia de la hoja informativa del proyecto se colocará en el Centro Hispanoamericano en Leominster por su petición.
- Previa solicitud, se programarán reuniones de información del proyecto en persona en ubicaciones convenientes a lo largo de las rutas de un proyecto a medida que avanzan los proyectos.
- Si tiene preguntas adicionales, comuníquese al 844-313-3437 o envíenos un correo electrónico a info@centralmassreliability.com

Los destinatarios de este formulario incluyen organizaciones en la Lista de Referencia de EJ proporcionada por la Oficina Ejecutiva de Energía y Asuntos Ambientales de Massachusetts según el Protocolo de Participación Pública, así como de agencia y otros revisores. Además, este formulario se enviará a los Administradores Municipales y Propietarios de propiedades dentro de una Comunidad EJ que se encuentra dentro de un radio de 1 milla de la línea principal 313/343 y P142/O141 y Derecho de paso del Tap Line.

**Tipos de proyectos de MEPA [Nota: esta lista se puede omitir al distribuir este formulario].*

| | |
|---|---|
| Artículo 97 | Marihuana |
| Agricultura | Marina industrial |
| Aeropuerto | Plan maestro: desarrollo |
| Acuicultura/Mariscos | Plan maestro: plan de renovación urbana |
| Relleno de costas/playas | Otro (especifique) |
| Infraestructura costera | Recreación |
| Comercial: oficina/laboratorio/I+D | Regulaciones |
| Comercial: hotel | Remediación |
| Comercial: depósito | Residencial |
| Comercial: minorista | Resiliencia |
| Eliminación de represas | Residuos sólidos |
| Reparación/reemplazo de represas | Transporte: carreteras/tránsito |
| Dragado | Transporte: senderos |

| | |
|---|---|
| Restauración ecológica | Aguas residuales: tratamiento/transporte |
| Generación de energía | Aguas residuales: Plan integral de manejo de aguas residuales (CWMP) |
| Almacenamiento de energía | Suministro de agua: nueva fuente |
| Transporte de energía | Abastecimiento de agua: tratamiento/transporte |
| Industrial | |
| Institucional: educativo | |




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

**Legend**

- O141
- O141S
- O141S/P142
- O141S/P142S
- O141W
- O142/O141W
- P142N/O141N
- P142S
- Proposed Connection - Line O141/P142
- Line 313
- Line 343
- One- and Five-Mile Radii Around Lines
- 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



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

**Anexo B: 313/343 y O141/P142 ACR Criterios de EJ para salud vulnerable (1 milla)**

| Municipio | Estado de criterios de EJ y EJ para salud vulnerable | Criterios de EJ para salud vulnerable cumplidos | Tasa estatal por 1000 |
|---|---|---|---|
| Ayer | Cumple al menos un criterio de EJ para salud vulnerable | Tasa de infarto por 10,000 | 41 |
| Boylston | No cumple con ningún criterio de EJ para salud vulnerable | N/A | N/A |
| Grafton | No cumple con ningún criterio de EJ para salud vulnerable | N/A | N/A |
| Lancaster | No cumple con ningún criterio de EJ para salud vulnerable | N/A | N/A |
| Millbury | No cumple con ningún criterio de EJ para salud vulnerable | N/A | N/A |
| Shirley | Cumple al menos un criterio de EJ para salud vulnerable | Tasa de infarto por 10,000 | 35 |
| Shrewsbury | No cumple con ningún criterio de EJ para salud vulnerable | N/A | N/A |
| Sterling | No cumple con ningún criterio de EJ para salud vulnerable | N/A | N/A |

| | | | |
|---|---|---|---|
| West Boylston | No cumple con ningún criterio de EJ para salud vulnerable | N/A | N/A |
| Worcester | Cumple al menos un criterio de EJ para salud vulnerable | Tasa de envenenamiento por plomo por 1,000 nacimiento bajo | 22 |
| | | Tasa de peso por 1,000 | 261 |
| | | Tasa de visitas a la educación pediátrica sobre el asma por 10,000 | 136 |

**Anexo C: Proyecto 313/343 & O141/P142 ACR Departamento de Salud Pública de Massachusetts (DPH)**
**Comunidades de EJ (1 milla)**

| Municipio | Nombre del área geográfica | Descripción de los criterios de EJ | Grupo de bloque | Población minoritaria (%) | Ingreso mediano | Porcentaje de MA Ingreso mediano (%) |
|---|---|---|---|---|---|---|
| Ayer | Grupo de bloque 1, Tramo censal 3251.01, Condado de Middlesex | Grupo minoritario | 1 | 27.17 | $82,857 | 98.19 |
| Ayer | Grupo de bloque 1, Tramo censal 3251.02, Condado de Middlesex | Ingresos | 1 | 18.65 | $52,120 | 61.76 |
| Ayer | Grupo de bloque 4, Tramo censal 3251.02, Condado de Middlesex | Grupo minoritario | 4 | 29.37 | $81,500 | 96.58 |
| Ayer | Grupo de bloque 5, Tramo censal 3251.02, Condado de Middlesex | Grupo minoritario | 5 | 39.61 | $68,462 | 81.13 |
| Shirley | Grupo de bloque 2, Tramo censal 3882, Condado de Middlesex | Grupo minoritario | 2 | 41.12 | $69,342 | 82.17 |
| Leominster | Grupo de bloque 1, Tramo censal 7092.03, Condado de Worcester | Grupo minoritario | 1 | 31.19 | $120,833 | 143.19 |
| Leominster | Grupo de bloque 1, Tramo censal 7092.04, Condado de Worcester | Grupo minoritario | 1 | 43.82 | $92,567 | 109.70 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Leominster | Grupo de bloque 3, Tramo censal 7092.04, Condado de Worcester | Grupo minoritario | 3 | 30.41 | $87,559 | 103.76 |
| Lancaster | Grupo de bloque 4, Tramo censal 7131, Condado de Worcester | Grupo minoritario | 4 | 36.04 | $108,676 | 128.79 |
| Worcester | Grupo de bloque 1, Tramo censal 7301, Condado de Worcester | Grupo minoritario | 1 | 40.74 | $104,228 | 123.51 |
| Worcester | Grupo de bloque 2, Tramo censal 7301, Condado de Worcester | Grupo minoritario | 2 | 34.68 | $76,351 | 90.48 |
| Worcester | Grupo de bloque 3, Tramo censal 7301, Condado de Worcester | Grupo minoritario | 3 | 39.76 | $79,926 | 94.72 |
| Worcester | Grupo de bloque 4, Tramo censal 7301, Condado de Worcester | Grupo minoritario | 4 | 37.69 | $60,430 | 71.61 |
| Worcester | Grupo de bloque 1, Tramo censal 7302, Condado de Worcester | Grupo minoritario | 1 | 36.09 | $107,574 | 127.48 |
| Worcester | Grupo de bloque 2, Tramo censal 7302, Condado de Worcester | Grupo minoritario | 2 | 44.44 | $55,938 | 66.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo de bloque 3, Tramo censal 7302, Condado de Worcester | Grupo minoritario, ingresos y aislamiento de Ingles | 3 | 25.36 | $44,681 | 52.95 |
| Worcester | Grupo de bloque 5, Tramo censal 7302, Condado de Worcester | Grupo minoritario | 5 | 26.31 | $68,917 | 81.67 |
| Worcester | Grupo de bloque 1, Tramo censal 7303, Condado de Worcester | Grupo minoritario | 1 | 39.38 | $55,733 | 66.05 |
| Worcester | Grupo de bloque 2, Tramo censal 7303, Condado de Worcester | Grupo minoritario | 2 | 40.54 | $79,118 | 93.76 |
| Worcester | Grupo de bloque 3, Tramo censal 7303, Condado de Worcester | Grupo minoritario | 3 | 25.48 | $87,625 | 103.84 |
| Worcester | Grupo de bloque 4, Tramo censal 7303, Condado de Worcester | Grupo minoritario | 4 | 39.07 | $55,682 | 65.99 |
| Worcester | Grupo de bloque 5, Tramo censal 7303, Condado de Worcester | Grupo minoritario | 5 | 31.68 | $87,656 | 103.88 |
| Worcester | Grupo de bloque 1, Tramo censal 7304.01, Condado de Worcester | Grupo minoritario | 1 | 40.48 | $67,969 | 80.55 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo de bloque 2, Tramo censal 7304.01, Condado de Worcester | Grupo minoritario | 2 | 32.21 | $87,875 | 104.14 |
| Worcester | Grupo de bloque 3, Tramo censal 7304.01, Condado de Worcester | Grupo minoritario e ingresos | 3 | 75.44 | $31,365 | 37.17 |
| Worcester | Grupo de bloque 1, Tramo censal 7304.02, Condado de Worcester | Grupo minoritario e ingresos | 1 | 52.94 | $54,875 | 65.03 |
| Worcester | Grupo de bloque 2, Tramo censal 7304.02, Condado de Worcester | Grupo minoritario | 2 | 69.64 | $61,607 | 73.01 |
| Worcester | Grupo de bloque 1, Tramo censal 7305, Condado de Worcester | Grupo minoritario e ingresos | 1 | 42.03 | $49,046 | 58.12 |
| Worcester | Grupo de bloque 2, Tramo censal 7305, Condado de Worcester | Grupo minoritario | 2 | 70.51 | $59,375 | 70.36 |
| Worcester | Grupo de bloque 3, Tramo censal 7305, Condado de Worcester | Grupo minoritario e ingresos | 3 | 41.78 | $44,125 | 52.29 |
| Worcester | Grupo de bloque 2, Tramo censal 7306, Condado de Worcester | Ingresos | 2 | 21.69 | $17,179 | 20.36 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo de bloque 5, Tramo censal 7306, Condado de Worcester | Grupo minoritario e ingresos | 5 | 24.91 | $34,952 | 41.42 |
| Worcester | Grupo de bloque 1, Tramo censal 7316.01, Condado de Worcester | Grupo minoritario e ingresos | 1 | 48.36 | $17,012 | 20.16 |
| Worcester | Grupo de bloque 5, Tramo censal 7316.01, Condado de Worcester | Grupo minoritario e ingresos | 5 | 41.82 | $44,145 | 52.31 |
| Worcester | Grupo de bloque 1, Tramo censal 7316.02, Condado de Worcester | Grupo minoritario e ingresos | 1 | 34.71 | $45,135 | 52.58 |
| Worcester | Grupo de bloque 2, Tramo censal 7316.02, Condado de Worcester | Grupo minoritario, ingresos y aislamiento de Ingles | 2 | 34.35 | $25,921 | 30.72 |
| Worcester | Grupo de bloque 2, Tramo censal 7317, Condado de Worcester | Grupo minoritario e ingresos | 2 | 46.12 | $34,856 | 41.31 |
| Worcester | Grupo de bloque 1, Tramo censal 7318.01, Condado de Worcester | Grupo minoritario e ingresos | 1 | 44.13 | $47,208 | 55.94 |
| Worcester | Grupo de bloque 2, Tramo censal 7318.01, Condado de Worcester | Grupo minoritario, ingresos y aislamiento de Ingles | 2 | 50.43 | $15,176 | 17.98 |

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|---|---|---|---|---|---|---|
| Worcester | Grupo de bloque 2, Tramo censal 7318.02, Condado de Worcester | Grupo minoritario, ingresos y aislamiento de Ingles | 2 | 91.93 | $11,543 | 13.68 |
| Worcester | Grupo de bloque 3, Tramo censal 7318.02, Condado de Worcester | Grupo minoritario | 3 | 77.00 | $97,885 | 114.03 |
| Worcester | Grupo de bloque 1, Tramo censal 7319, Condado de Worcester | Grupo minoritario e ingresos | 1 | 68.79 | $33,804 | 40.06 |
| Worcester | Grupo de bloque 2, Tramo censal 7319, Condado de Worcester | Grupo minoritario e ingresos | 2 | 70.71 | $53,375 | 63.25 |
| Worcester | Grupo de bloque 3, Tramo censal 7319, Condado de Worcester | Grupo minoritario e ingresos | 3 | 74.53 | $43,646 | 51.72 |
| Worcester | Grupo de bloque 4, Tramo censal 7319, Condado de Worcester | Grupo minoritario e ingresos | 4 | 71.39 | $37,429 | 44.36 |
| Worcester | Grupo de bloque 1, Tramo censal 7320.01, Condado de Worcester | Grupo minoritario, ingresos y aislamiento de Ingles | 1 | 85.17 | $15,718 | 18.63 |
| Worcester | Grupo de bloque 2, Tramo censal 7320.01, Condado de Worcester | Grupo minoritario e ingresos | 2 | 73.48 | $30,000 | 35.55 |

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|---|---|---|---|---|---|---|
| Worcester | Grupo de bloque 1, Tramo censal 7320.02, Condado de Worcester | Grupo minoritario | 1 | 62.88 | $65,965 | 78.17 |
| Worcester | Grupo de bloque 2, Tramo censal 7320.02, Condado de Worcester | Grupo minoritario | 2 | 39.74 | $60,893 | 72.16 |
| Worcester | Grupo de bloque 3, Tramo censal 7320.02, Condado de Worcester | Grupo minoritario | 3 | 33.37 | $67,188 | 79.62 |
| Worcester | Grupo de bloque 1, Tramo censal 7322.01, Condado de Worcester | Grupo minoritario e ingresos | 1 | 35.56 | $45,224 | 53.59 |
| Worcester | Grupo de bloque 2, Tramo censal 7322.01, Condado de Worcester | Grupo minoritario | 2 | 47.57 | $76,250 | 90.36 |
| Worcester | Grupo de bloque 1, Tramo censal 7322.02, Condado de Worcester | Grupo minoritario e ingresos | 1 | 41.89 | $51,163 | 60.63 |
| Worcester | Grupo de bloque 2, Tramo censal 7322.02, Condado de Worcester | Grupo minoritario | 2 | 38.89 | $92,344 | 109.43 |
| Worcester | Grupo de bloque 1, Tramo censal 7322.03, Condado de Worcester | Grupo minoritario y aislamiento del Ingles | 1 | 56.73 | $75,401 | 89.35 |

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|---|---|---|---|---|---|---|
| Worcester | Grupo de bloque 2, Tramo censal 7322.03, Condado de Worcester | Grupo minoritario, ingresos y aislamiento de Ingles | 2 | 51.76 | $68,902 | 81.65 |
| Worcester | Grupo de bloque 3, Tramo censal 7322.03, Condado de Worcester | Grupo minoritario e ingresos | 3 | 68.75 | $39,732 | 47.08 |
| Worcester | Grupo de bloque 1, Tramo censal 7323.01, Condado de Worcester | Grupo minoritario | 1 | 42.72 | $61,607 | 73.01 |
| Worcester | Grupo de bloque 2, Tramo censal 7323.01, Condado de Worcester | Grupo minoritario | 2 | 35.12 | $68,795 | 81.53 |
| Worcester | Grupo de bloque 1, Tramo censal 7323.02, Condado de Worcester | Grupo minoritario e ingresos | 1 | 56.12 | $39,207 | 46.46 |
| Worcester | Grupo de bloque 2, Tramo censal 7323.02, Condado de Worcester | Grupo minoritario | 2 | 46.02 | $77,561 | 91.91 |
| Worcester | Grupo de bloque 1, Tramo censal 7328.01, Condado de Worcester | Grupo minoritario | 1 | 32.93 | $77,821 | 92.22 |
| Worcester | Grupo de bloque 2, Tramo censal 7328.01, Condado de Worcester | Grupo minoritario | 2 | 42.81 | $70,766 | 83.86 |

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|---|---|---|---|---|---|---|
| Worcester | Grupo de bloque 1, Tramo censal 7328.02, Condado de Worcester | Grupo minoritario | 1 | 41.79 | $63,676 | 75.46 |
| Millbury | Grupo de bloque 1, Tramo censal 7372, Condado de Worcester | Ingresos | 1 | 16.65 | $53,875 | 63.84 |
| Millbury | Grupo de bloque 2, Tramo censal 7372, Condado de Worcester | Ingresos | 2 | 13.73 | $53,375 | 63.25 |
| Shrewsbury | Grupo de bloque 2, Tramo censal 7391.01, Condado de Worcester | Grupo minoritario | 2 | 32.05 | $72,425 | 85.83 |
| Shrewsbury | Grupo de bloque 3, Tramo censal 7391.01, Condado de Worcester | Grupo minoritario | 3 | 44.44 | $131,200 | 155.48 |
| Shrewsbury | Grupo de bloque 1, Tramo censal 7391.02, Condado de Worcester | Grupo minoritario | 1 | 57.23 | $148,523 | 176.01 |
| Shrewsbury | Grupo de bloque 2, Tramo censal 7391.02, Condado de Worcester | Grupo minoritario | 2 | 58.24 | $100,313 | 118.88 |
| Shrewsbury | Grupo de bloque 1, Tramo censal 7392.01, Condado de Worcester | Grupo minoritario | 1 | 35.00 | $80,756 | 95.70 |

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|---|---|---|---|---|---|---|
| Shrewsbury | Grupo de bloque 2, Tramo censal 7392.01, Condado de Worcester | Grupo minoritario | 2 | 52.80 | $74,873 | 88.73 |
| Shrewsbury | Grupo de bloque 1, Tramo censal 7392.02, Condado de Worcester | Grupo minoritario | 1 | 40.31 | $94,946 | 112.52 |
| Shrewsbury | Grupo de bloque 2, Tramo censal 7392.02, Condado de Worcester | Grupo minoritario | 2 | 40.02 | $92,500 | 109.62 |
| Shrewsbury | Grupo de bloque 2, Tramo censal 7393, Condado de Worcester | Grupo minoritario | 2 | 38.18 | $85,625 | 101.47 |
| Shrewsbury | Grupo de bloque 4, Tramo censal 7395, Condado de Worcester | Grupo minoritario | 4 | 29.78 | $114,198 | 135.33 |
| Harvard | Grupo de bloque 2, Tramo censal 7614.02, Condado de Worcester | Grupo minoritario | 2 | 47.70 | $133,594 | 158.31 |

# Formulário de Avaliação de Justiça Ambiental

| | |
|---|---|
| Nome do Projeto | Projeto de Beneficiação de Estrada de Acesso |
| Data prevista para submissão da MEPA | O Formulário de Notificação Ambiental Ampliado (EENF, sigla em inglês) será submetido até ao dia 30 de Novembro de 2023 |
| Nome do proponente | New England Power Company (NEP) |
| Informações de contacto (por exemplo, consultor) | Dan Herzlinger, TRC Companies, Inc.<br>6 Ashley Drive, 1st Floor<br>Scarborough, ME 04074<br>978-935-8065 |
| Website público para o Projeto ou outro local físico onde os materiais do Projeto podem ser obtidos (se disponíveis) | www.centralmassreliability.com |
| Município e código postal do Projeto (se conhecido) | Ayer (01432), Shirley (01464), Lancaster (01523), Sterling (01564), West Boylston (01583), Boylston (01505), Shrewsbury (01545), Worcester (01608), Grafton (01519) e Millbury (01527) |
| Tipo de Projeto* (indicar todas as opções aplicáveis) | Transmissão de Energia - Beneficiação da Estrada de Acesso dentro dos Direitos de Servidão Existentes |
| Está o local do projeto dentro de uma planície de inundação FEMA mapeada a 100 anos? S/ N/ desconhecido | Sim, em pequenas partes dos Direitos Servidão espalhados ao longo da extensão do projeto |
| Emissões de GEE estimadas dos espaços condicionados (clique **aqui** para aceder à ferramenta de estimativas de GEE) | Não aplicável – não se propõe nenhum edifício como parte deste projeto. |

Descrição do Projeto

1. Forneça uma breve descrição do projeto, incluindo a dimensão global do local do projeto e medidas em metros quadrados dos edifícios e estruturas propostos, se conhecidas.

A New England Power Company (NEP) propõe realizar melhorias nas estradas de acesso dentro dos direitos de servidão (ROW) existentes para atender às necessidades de acesso de várias linhas de transmissão no centro de Massachusetts. O ROW é partilhado por dez (10) linhas de transmissão de várias voltagens (345 kV, 115 kV e 69 kV), embora nem todas as linhas de transmissão atravessem toda a extensão do ROW. O ROW tem aproximadamente 57,4 quilómetros e corre geralmente na direção sudoeste-nordeste entre Cross Street, em Millbury, e Westford Road, em Ayer.

Além de fornecer acesso seguro e confiável a longo prazo, no imediato, as melhorias na estrada de acesso serão utilizadas para apoiar projetos de manutenção do NEP (Neighborhood Enhancement Program [Programa de Melhoramento de Comunidades Habitacionais]) dentro deste ROW (right-of-way [direito de passagem, via pública]), nomeadamente: o Projeto de Renovação da Condição de Ativos (ACR, sigla em inglês) da Linha P142/O141, projeto que envolve a substituição de estruturas e Fibra Ótica (OPGW, sigla

em inglês), bem como o Projeto ACR da Linha 313/343, que envolve a substituição de estruturas e instalação de OPGW em duas fases.

Serão necessárias melhorias nas estradas de acesso existentes e a construção de novas e permanentes áreas de trabalho, as quais ocorrerão dentro do ROW existente da concessionária, a fim de fornecer acesso seguro e confiável. A NEP propõe realizar essas melhorias de uma só vez, a fim de proporcionar eficiência de custos aos nossos clientes, reduzir perturbações aos proprietários e minimizar custos regulatórios e administrativos. A NEP incluirá os impactos dos três projetos de manutenção na EENF. Não se propõe qualquer derrube significativo de árvores ou expansão do ROW como parte deste projeto.

2. Enumere os limites de análise MEPA previstos (301 CMR 11.03) (se conhecidos)

De acordo com a Lei de Proteção de Zonas Húmidas e MEPA, o trabalho da linha de transmissão nos projetos está isento no que toca à manutenção e substituição de serviços públicos. No entanto, as melhorias nas estradas de acesso existentes e a construção de áreas de trabalho novas e permanentes não estão isentas.

**ENF e Outras Revisões:**

- 301 CMR 11.03(1)(b)(1) – Alteração direta de 10,2 hectares ou mais de terra, a menos que o projeto seja consistente com um plano agrícola de conservação aprovado ou plano de corte florestal ou outras práticas agrícolas ou florestais semelhantes geralmente aceites.
- 301 CMR 11.03(2)(b)(2) – Mais de 0,8 hectares de perturbação do habitat prioritário designado, conforme definido na 321 CMR 10.02, que resulta na captura de uma espécie considerada pelo estado em perigo ou ameaçada ou espécie que mereça atenção especial
- 301 CMR 11.03(11)(b) – Qualquer Projeto de 0,2 ou mais hectares dentro de um ACEC designado, a menos que o Projeto consista apenas numa única residência familiar.

3. Enumere todas as possíveis autorizações estatais, locais e federais necessárias para o Projeto (se conhecidas)

| Agência | Autorização, Revisão ou Aprovação |
|---|---|
| **Federal** | |
| Corpo de Engenheiros do Exército dos EUA (USACE) | Secção 404 Licença de Notificação Pré-Construção e consultas sob a Secção 106 da Lei de Preservação Histórica Nacional e Secção 7 da Lei de Espécies Ameaçadas |
| Agência de Proteção Ambiental dos Estados Unidos (EPA) | Sistema Nacional de Eliminação de Descargas de Poluentes (NPDES) Licença Geral para Descargas de Águas Pluviais e Atividades de Desidratação de Construção/Plano de Prevenção da Poluição de Águas Pluviais (SWPPP) |
| **Estado** | |
| Escritório Executivo de Assuntos Energéticos e Ambientais (EEA) | Revisão MEPA/Certificado do Secretário |
| Departamento de Proteção Ambiental de Massachusetts (MassDEP) | Secção 401 Certificado Abrangente de Qualidade da Água |
| Departamento de Conservação e Recreação (DCR) | Licença de Acesso para Construção |
| Programa Património Natural e Espécies Ameaçadas de Extinção (NHESP) | Licença de Gestão de Conservação |

| **Local** | |
|---|---|
| Comissões de Conservação em Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton e Millbury. | Ordem das Condições de acordo com a Lei de Proteção das Zonas Húmidas de Massachusetts (MA WPA) |

4. Identifique populações e características de EJ (Minoria, Renda, Isolamento em relação ao inglês) dentro de 8 quilómetros do local do projeto (pode anexar um mapa a identificar um raio de 8 quilómetros do EJ Maps Viewer em vez de descrever)

Ver **Anexo A**

5. Identificar os municípios ou setores do censo que cumprem a definição de "critérios de saúde vulnerável EJ" na Ferramenta DPH EJ localizados total ou parcialmente num raio de 1,6 quilómetros do local do projeto

**Ver Anexo B.**

6. Identifique potenciais impactos de saúde pública e ambientais a curto e longo prazo que possam afetar as Populações EJ, bem como qualquer mitigação prevista

As populações EJ num raio de 1,6 quilómetros do ROW (a área geográfica designada para o projeto) são apresentadas no **Anexo C.**

Os potenciais impactos ambientais e de saúde pública do Projeto e mitigação prevista incluem o seguinte:

**Qualidade da água:**
O projeto incluirá medidas de proteção e prevenção para minimizar e evitar impactos na qualidade da água. O ROW atravessa muitas áreas húmidas, ribeiros e rios, incluindo o Reservatório Wachusett, que serve de abastecimento público de água às áreas circundantes. Para proteger a qualidade da água e essas áreas sensíveis, estradas provisórias serão construídas usando tapetes de construção. Os tapetes de construção são normalmente compostos por vigas de madeira aparafusadas e têm normalmente 1,2 metros de largura por 4,8 metros de comprimento. São colocados temporariamente sobre o solo e a vegetação e permitem que máquinas e veículos pesados atravessem áreas sensíveis sem danificar o solo ou as raízes da vegetação. A sua colocação é feita de forma a não afetar o fluxo de água nos ribeiros. Após a conclusão da construção, os tapetes serão removidos e as zonas húmidas restauradas. Além disso, as Melhores Práticas de Gestão serão implementadas. Também se recorrerá ao uso de paus de palha, cercas de silte, recursos de gestão de águas pluviais e outras medidas de controle para evitar que o solo e outros materiais sejam transportados para áreas húmidas e ribeiros. Usando essas Melhores Práticas de Gestão, quaisquer impactos na qualidade da água serão insignificantes e temporários e não se espera que causem impactos na saúde pública.

**Proteção da Terra e Espaço Aberto:**
O Projeto passa por terras protegidas e áreas abertas ao redor do Reservatório Wachusett que são mantidas pelo Departamento de Conservação e Recreação de Massachusetts (DCR). Uma vez que as atividades do Projeto serão limitadas ao ROW existente, o acesso a Terra Protegida e Espaço Aberto dentro das Populações EJ não será afetado.

**Barulho:**
As comunidades EJ com maior probabilidade de serem afetadas pelo barulho são as comunidades que estão dentro ou perto do ROW. Os impactos de barulho associados às atividades do período de construção são de natureza temporária e espera-se que sejam mínimos à medida que o trabalho avança ao longo das linhas de transmissão. Quando os trabalhos ocorrerem perto de residências, a NEP notificará os proprietários antes do início dos mesmos. Todas as atividades geradoras de barulho serão realizadas de acordo com requisitos locais e estatais e não se espera que causem impactos à saúde pública.

**Tráfego:**
Os impactos no tráfego durante os trabalhos do projeto serão mínimos e intermitentes. O acesso às áreas de trabalho será feito principalmente a partir de áreas de taxa NEP ou de servidão NEP, fora das estradas da cidade. A NEP obterá do MassDOT as autorizações necessárias de acesso. Uma vez no local, o tráfego de veículos será limitado dentro ou próximo ao ROW. Uma vez que o ROW é uma instalação sem supervisão, não haverá impactos permanentes nos padrões de tráfego ou no uso das estradas existentes e não se prevê qualquer impacto para a saúde pública derivado do tráfego.

7. Identifique vantagens do Projeto, incluindo “Vantagens Ambientais”, conforme definido na 301 CMR 11.02, que poderão melhorar as condições ambientais ou a saúde pública da população EJ

As potenciais “Vantagens Ambientais” incluem:

- Maior resiliência do sistema geral de linha de transmissão em massa. Ao instalar fundações melhoradas, novas estruturas de comutação e estruturas de substituição atualizadas, esta infraestrutura será mais adequada para resistir a ventos fortes e tempestades resultantes de mudanças climáticas.
- A instalação do OPGW permitirá uma melhor comunicação entre as subestações, resultando em melhor tempo de resposta durante emergências e interrupções causadas por tempestades, o que aumentará a segurança pública.

Outras vantagens deste Projeto que não estão expressamente incluídas na definição de “Vantagens Ambientais” são as seguintes:

- Reduz a perturbação geral para os proprietários de terras adjacentes, áreas de recursos de zonas húmidas e habitat de espécies raras ao longo do tempo, planeando o futuro e diminuindo a probabilidade de vários projetos repetidos, reduzindo assim os impactos ambientais e os custos para os clientes da New England Power Company. Os três cronogramas de construção do projeto estão a ser coordenados para que todas as obras sejam executadas em série.
- A substituição das estruturas e instalação de OPGW terá o benefício adicional de permitir que mais recursos de energia renovável se conectem ao sistema. Abordar a mudança climática requer uma grande expansão de energia renovável e a infraestrutura necessária para apoiar e fornecer essa energia. A NEP está a tomar medidas para garantir que o seu sistema esteja pronto para enfrentar esse desafio crítico. A substituição de infraestruturas, como as linhas 313/343 & P142/O141, contribui para atingir este objetivo.

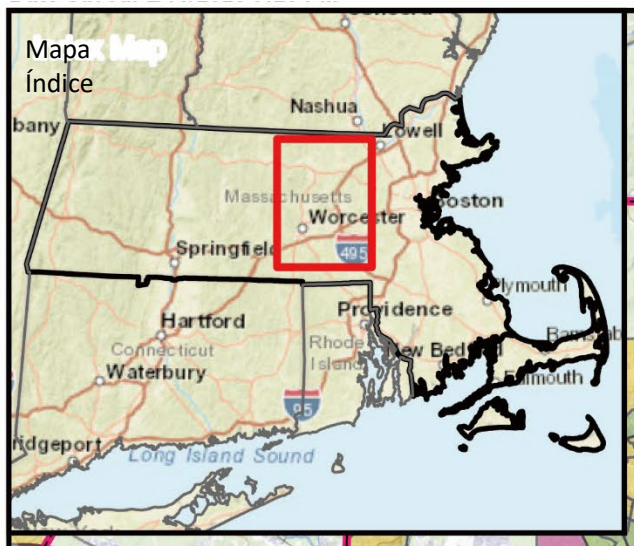
8. Descreva como a comunidade pode solicitar uma reunião para discutir o projeto, bem como solicitar serviços de interpretação na reunião. Especifique como solicitar outros ajustes, incluindo reuniões após o horário comercial e em locais perto de transportes públicos.

As comunidades e cidadãos individuais podem aceder às informações relacionadas com o projeto das seguintes formas:

- O site www.centralmassreliability.com, fornece informações sobre os projetos e será atualizado com informações sobre cronogramas de projetos e outras informações assim que estiverem disponíveis. O site será traduzido para espanhol, português do Brasil, cabo-verdiano (também conhecido como crioulo português) e chinês tradicional.
- O site contém um número gratuito e um endereço de e-mail direcionados à equipa de acompanhamento da NEP.
- Uma reunião informativa virtual organizada pela NEP será agendada num futuro próximo:
    - Os destinatários do formulário de avaliação Lista de Referência EJ receberão informações relacionadas com esta reunião por e-mail. Serão facultadas traduções em espanhol, português do Brasil, cabo-verdiano (também conhecido como crioulo português) e chinês tradicional
    - Notificações (incluindo as respetivas traduções) desta reunião virtual serão publicadas no(s) jornal(is) apropriado(s) com circulação em cada município antes da data da reunião.
- Cópias impressas de matérias do projeto serão disponibilizadas nas bibliotecas municipais e/ou Câmaras Municipais ou estações de transmissão.
- Uma cópia da folha informativa do projeto estará disponível no Centro Americano Espanhol em Leominster, mediante solicitação.
- Também mediante solicitação, serão agendadas reuniões presenciais de informações sobre o projeto em locais convenientes ao longo das rotas do projeto à medida que os projetos avançam.
- Em caso de dúvidas, entre em contato com 844-313-3437 ou envie um e-mail para info@centralmassreliability.com

Os destinatários deste formulário são organizações na Lista de Referência EJ fornecida pelo Escritório Executivo de Assuntos Ambientais e de Energia de Massachusetts, de acordo com o Protocolo de Envolvimento Público, com a Agencia e Outros Revisores. Além disso, o formulário vai ser enviado aos Administradores Municipais e Proprietários de imóveis numa Comunidade EJ que esteja localizada num raio de 1,6 quilómetros da linha principal 313/343 e P142/O141 e do Tap Line ROW.

**MODELO**




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

**Legenda**

- O141
- O141S
- O141S/P142
- O141S/P142S
- O141W
- O142/O141W
- P142N/O141N
- P142S
- Conexão Proposta - Linha O141/P142
- Linha 313
- Linha 343
- Raios de 1,6 e 8 quilómetros ao redor das linhas
- Limite Municipal

**Grupos Blocos de Justiça Ambiental***

- Minoria
- Renda
- Isolamento em relação ao Inglês
- Minoria e Renda
- Minoria e isolamento em relação ao inglês
- Renda e Isolamento em relação ao Inglês
- Minoria, renda e isolamento em relação ao inglês

***Indica Camadas Definidas como Transparência***

N

1:180,000

7 500 15 000

Pés

# LINHAS O141/P142 & 313/343

## Áreas de Justiça Ambiental

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

Página 1 de 1

Fonte: EOEEA, 2022

Mapa base: World_Street_Map: Esri, HERE, Garmin, NGA, USGS, NPS USGSTopo: USGS Mapa Nacional: Conjunto de Dados de Limites Nacionais, Programa de Elevação 3DEP, Sistema de Informação de Nomes Geográficos, Conjunto de Dados de Hidrografia Nacional, Banco de Dados Nacional de Cobertura do Solo, Estruturas Nacionais

nationalgrid TRC

Anexo B: Critérios EJ de Saúde Vulnerável 313/343 & O141/P142 ACR (1,6 quilómetros)

| Município | EJ e estado dos Critérios de Saúde Vulnerável EJ | Critérios de Saúde Vulnerável EJ cumpridos | Taxa estadual por 1000 |
|---|---|---|---|
| Ayer | Cumpre, pelo menos, um dos critérios de Saúde Vulnerável EJ | Taxa de ataque cardíaco por 10 000 | 41 |
| Boylston | Não cumpre nenhum Critério de Saúde Vulnerável EJ | N/A | N/A |
| Grafton | Não cumpre nenhum Critério de Saúde Vulnerável EJ | N/A | N/A |
| Lancaster | Não cumpre nenhum Critério de Saúde Vulnerável EJ | N/A | N/A |
| Millbury | Não cumpre nenhum Critério de Saúde Vulnerável EJ | N/A | N/A |
| Shirley | Cumpre, pelo menos, um dos critérios de Saúde Vulnerável EJ | Taxa de ataque cardíaco por 10 000 | 35 |
| Shrewsbury | Não cumpre nenhum Critério de Saúde Vulnerável EJ | N/A | N/A |
| Sterling | Não cumpre nenhum Critério de Saúde Vulnerável EJ | N/A | N/A |

| | | | |
|---|---|---|---|
| West Boylston | Não cumpre nenhum Critério de Saúde Vulnerável EJ | N/A | N/A |
| Worcester | Cumpre, pelo menos, um dos critérios de Saúde Vulnerável EJ | Taxa de envenenamento por chumbo por 1000<br>Taxa bruta de natalidade baixa por 1000<br>Taxa de consultas de asma pediátrica ED por 10 000 | 22<br>261<br>136 |

**Anexo C: Projeto 313/343 & O141/P142 ACR**
**Comunidades EJ do Departamento de Saúde Pública (DPH) de Massachusetts (1,6 quilómetros)**

| Município | Nome da área geográfica | Descrição dos Critérios EJ | Grupo Bloco | População minoritária (%) | Renda Mediana | Percentagem da renda mediana MA (%) |
|---|---|---|---|---|---|---|
| Ayer | Grupo Bloco 1, Setor do Censo 3251,01, Condado de Middlesex | Minoria | 1 | 27,17 | $82 857 | 98,19 |
| Ayer | Grupo Bloco 1, Setor do Censo 3251,02, Condado de Middlesex | Renda | 1 | 18,65 | $52 120 | 61,76 |
| Ayer | Grupo Bloco 4, Setor do Censo 3251,02, Condado de Middlesex | Minoria | 4 | 29,37 | $81 500 | 96,58 |
| Ayer | Grupo Bloco 5, Setor do Censo 3251,02, Condado de Middlesex | Minoria | 5 | 39,61 | $68 462 | 81,13 |
| Shirley | Grupo Bloco 2, Setor do Censo 3882, Condado de Middlesex | Minoria | 2 | 41,12 | $69 342 | 82,17 |
| Leominster | Grupo Bloco 1, Setor do Censo 7092,03, Condado de Worcester | Minoria | 1 | 31,19 | $120 833 | 143,19 |
| Leominster | Grupo Bloco 1, Setor do Censo 7092,04, Condado de Worcester | Minoria | 1 | 43,82 | $92 567 | 109,70 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Leominster | Grupo Bloco 3, Setor do Censo 7092,04, Condado de Worcester | Minoria | 3 | 30,41 | $87 559 | 103,76 |
| Lancaster | Grupo Bloco 4, Setor do Censo 7131, Condado de Worcester | Minoria | 4 | 36,04 | $108 676 | 128,79 |
| Worcester | Grupo Bloco 1, Setor do Censo 7301, Condado de Worcester | Minoria | 1 | 40,74 | $104 228 | 123,51 |
| Worcester | Grupo Bloco 2, Setor do Censo 7301, Condado de Worcester | Minoria | 2 | 34,68 | $76 351 | 90,48 |
| Worcester | Grupo Bloco 3, Setor do Censo 7301, Condado de Worcester | Minoria | 3 | 39,76 | $79 926 | 94,72 |
| Worcester | Grupo Bloco 4, Setor do Censo 7301, Condado de Worcester | Minoria | 4 | 37,69 | $60 430 | 71,61 |
| Worcester | Grupo Bloco 1, Setor do Censo 7302, Condado de Worcester | Minoria | 1 | 36,09 | $107 574 | 127,48 |
| Worcester | Grupo Bloco 2, Setor do Censo 7302, Condado de Worcester | Minoria | 2 | 44,44 | $55 938 | 66,29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo Bloco 3, Setor do Censo 7302, Condado de Worcester | Minoria, renda e isolamento em relação ao inglês | 3 | 25,36 | $44 681 | 52,95 |
| Worcester | Grupo Bloco 5, Setor do Censo 7302, Condado de Worcester | Minoria | 5 | 26,31 | $68 917 | 81,67 |
| Worcester | Grupo Bloco 1, Setor do Censo 7303, Condado de Worcester | Minoria | 1 | 39,38 | $55 733 | 66,05 |
| Worcester | Grupo Bloco 2, Setor do Censo 7303, Condado de Worcester | Minoria | 2 | 40,54 | $79 118 | 93,76 |
| Worcester | Grupo Bloco 3, Setor do Censo 7303, Condado de Worcester | Minoria | 3 | 25,48 | $87 625 | 103,84 |
| Worcester | Grupo Bloco 4, Setor do Censo 7303, Condado de Worcester | Minoria | 4 | 39,07 | $55 682 | 65,99 |
| Worcester | Grupo Bloco 5, Setor do Censo 7303, Condado de Worcester | Minoria | 5 | 31,68 | $87 656 | 103,88 |
| Worcester | Grupo Bloco 1, Setor do Censo 7304,01, Condado de Worcester | Minoria | 1 | 40,48 | $67 969 | 80,55 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo Bloco 2, Setor do Censo 7304,01, Condado de Worcester | Minoria | 2 | 32,21 | $87 875 | 104,14 |
| Worcester | Grupo Bloco 3, Setor do Censo 7304,01, Condado de Worcester | Minoria e renda | 3 | 75,44 | $31 365 | 37,17 |
| Worcester | Grupo Bloco 1, Setor do Censo 7304,02, Condado de Worcester | Minoria e renda | 1 | 52,94 | $54 875 | 65,03 |
| Worcester | Grupo Bloco 2, Setor do Censo 7304,02, Condado de Worcester | Minoria | 2 | 69,64 | $61 607 | 73,01 |
| Worcester | Grupo Bloco 1, Setor do Censo 7305, Condado de Worcester | Minoria e renda | 1 | 42,03 | $49 046 | 58,12 |
| Worcester | Grupo Bloco 2, Setor do Censo 7305, Condado de Worcester | Minoria | 2 | 70,51 | $59 375 | 70,36 |
| Worcester | Grupo Bloco 3, Setor do Censo 7305, Condado de Worcester | Minoria e renda | 3 | 41,78 | $44 125 | 52,29 |
| Worcester | Grupo Bloco 2, Setor do Censo 7306, Condado de Worcester | Renda | 2 | 21,69 | $17 179 | 20,36 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo Bloco 5, Setor do Censo 7306, Condado de Worcester | Minoria e renda | 5 | 24,91 | $34 952 | 41,42 |
| Worcester | Grupo Bloco 1, Setor do Censo 7316,01, Condado de Worcester | Minoria e renda | 1 | 48,36 | $17 012 | 20,16 |
| Worcester | Grupo Bloco 5, Setor do Censo 7316,01, Condado de Worcester | Minoria e renda | 5 | 41,82 | $44 145 | 52,31 |
| Worcester | Grupo Bloco 1, Setor do Censo 7316,02, Condado de Worcester | Minoria e renda | 1 | 34,71 | $45 135 | 52,58 |
| Worcester | Grupo Bloco 2, Setor do Censo 7316,02, Condado de Worcester | Minoria, renda e isolamento em relação ao inglês | 2 | 34,35 | $25 921 | 30,72 |
| Worcester | Grupo Bloco 2, Setor do Censo 7317, Condado de Worcester | Minoria e renda | 2 | 46,12 | $34 856 | 41,31 |
| Worcester | Grupo Bloco 1, Setor do Censo 7318,01, Condado de Worcester | Minoria e renda | 1 | 44,13 | $47 208 | 55,94 |
| Worcester | Grupo Bloco 2, Setor do Censo 7318,01, Condado de Worcester | Minoria, renda e isolamento em relação ao inglês | 2 | 50,43 | $15 176 | 17,98 |

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|---|---|---|---|---|---|---|
| Worcester | Grupo Bloco 2, Setor do Censo 7318,02, Condado de Worcester | Minoria, renda e isolamento em relação ao inglês | 2 | 91,93 | $11 543 | 13,68 |
| Worcester | Grupo Bloco 3, Setor do Censo 7318,02, Condado de Worcester | Minoria | 3 | 77,00 | $97 885 | 114,03 |
| Worcester | Grupo Bloco 1, Setor do Censo 7319, Condado de Worcester | Minoria e renda | 1 | 68,79 | $33 804 | 40,06 |
| Worcester | Grupo Bloco 2, Setor do Censo 7319, Condado de Worcester | Minoria e renda | 2 | 70,71 | $53 375 | 63,25 |
| Worcester | Grupo Bloco 3, Setor do Censo 7319, Condado de Worcester | Minoria e renda | 3 | 74,53 | $43 646 | 51,72 |
| Worcester | Grupo Bloco 4, Setor do Censo 7319, Condado de Worcester | Minoria e renda | 4 | 71,39 | $37 429 | 44,36 |
| Worcester | Grupo Bloco 1, Setor do Censo 7320,01, Condado de Worcester | Minoria, renda e isolamento em relação ao inglês | 1 | 85,17 | $15 718 | 18,63 |
| Worcester | Grupo Bloco 2, Setor do Censo 7320,01, Condado de Worcester | Minoria e renda | 2 | 73,48 | $30 000 | 35,55 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo Bloco 1, Setor do Censo 7320,02, Condado de Worcester | Minoria | 1 | 62,88 | $65 965 | 78,17 |
| Worcester | Grupo Bloco 2, Setor do Censo 7320,02, Condado de Worcester | Minoria | 2 | 39,74 | $60 893 | 72,16 |
| Worcester | Grupo Bloco 3, Setor do Censo 7320,02, Condado de Worcester | Minoria | 3 | 33,37 | $67 188 | 79,62 |
| Worcester | Grupo Bloco 1, Setor do Censo 7322,01, Condado de Worcester | Minoria e renda | 1 | 35,56 | $45 224 | 53,59 |
| Worcester | Grupo Bloco 2, Setor do Censo 7322,01, Condado de Worcester | Minoria | 2 | 47,57 | $76 250 | 90,36 |
| Worcester | Grupo Bloco 1, Setor do Censo 7322,02, Condado de Worcester | Minoria e renda | 1 | 41,89 | $51 163 | 60,63 |
| Worcester | Grupo Bloco 2, Setor do Censo 7322,02, Condado de Worcester | Minoria | 2 | 38,89 | $92 344 | 109,43 |
| Worcester | Grupo Bloco 1, Setor do Censo 7322,03, Condado de Worcester | Minoria e isolamento em relação ao inglês | 1 | 56,73 | $75 401 | 89,35 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo Bloco 2, Setor do Censo 7322,03, Condado de Worcester | Minoria e isolamento em relação ao inglês | 2 | 51,76 | $68 902 | 81,65 |
| Worcester | Grupo Bloco 3, Setor do Censo 7322,03, Condado de Worcester | Minoria e renda | 3 | 68,75 | $39 732 | 47,08 |
| Worcester | Grupo Bloco 1, Setor do Censo 7323,01, Condado de Worcester | Minoria | 1 | 42,72 | $61 607 | 73,01 |
| Worcester | Grupo Bloco 2, Setor do Censo 7323,01, Condado de Worcester | Minoria | 2 | 35,12 | $68 795 | 81,53 |
| Worcester | Grupo Bloco 1, Setor do Censo 7323,02, Condado de Worcester | Minoria e renda | 1 | 56,12 | $39 207 | 46,46 |
| Worcester | Grupo Bloco 2, Setor do Censo 7323,02, Condado de Worcester | Minoria | 2 | 46,02 | $77 561 | 91,91 |
| Worcester | Grupo Bloco 1, Setor do Censo 7328,01, Condado de Worcester | Minoria | 1 | 32,93 | $77 821 | 92,22 |
| Worcester | Grupo Bloco 2, Setor do Censo 7328,01, Condado de Worcester | Minoria | 2 | 42,81 | $70 766 | 83,86 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo Bloco 1, Setor do Censo 7328,02, Condado de Worcester | Minoria | 1 | 41,79 | $63 676 | 75,46 |
| Millbury | Grupo Bloco 1, Setor do Censo 7372, Condado de Worcester | Renda | 1 | 16,65 | $53 875 | 63,84 |
| Millbury | Grupo Bloco 2, Setor do Censo 7372, Condado de Worcester | Renda | 2 | 13,73 | $53 375 | 63,25 |
| Shrewsbury | Grupo Bloco 2, Setor do Censo 7391,01, Condado de Worcester | Minoria | 2 | 32,05 | $72 425 | 85,83 |
| Shrewsbury | Grupo Bloco 3, Setor do Censo 7391,01, Condado de Worcester | Minoria | 3 | 44,44 | $131 200 | 155,48 |
| Shrewsbury | Grupo Bloco 1, Setor do Censo 7391,02, Condado de Worcester | Minoria | 1 | 57,23 | $148 523 | 176,01 |
| Shrewsbury | Grupo Bloco 2, Setor do Censo 7391,02, Condado de Worcester | Minoria | 2 | 58,24 | $100 313 | 118,88 |
| Shrewsbury | Grupo Bloco 1, Setor do Censo 7392,01, Condado de Worcester | Minoria | 1 | 35,00 | $80 756 | 95,70 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Shrewsbury | Grupo Bloco 2, Setor do Censo 7392,01, Condado de Worcester | Minoria | 2 | 52,80 | $74 873 | 88,73 |
| Shrewsbury | Grupo Bloco 1, Setor do Censo 7392,02, Condado de Worcester | Minoria | 1 | 40,31 | $94 946 | 112,52 |
| Shrewsbury | Grupo Bloco 2, Setor do Censo 7392,02, Condado de Worcester | Minoria | 2 | 40,02 | $92 500 | 109,62 |
| Shrewsbury | Grupo Bloco 2, Setor do Censo 7393, Condado de Worcester | Minoria | 2 | 38,18 | $85 625 | 101,47 |
| Shrewsbury | Grupo Bloco 4, Setor do Censo 7395, Condado de Worcester | Minoria | 4 | 29,78 | $114 198 | 135,33 |
| Harvard | Grupo Bloco 2, Setor do Censo 7614,02, Condado de Worcester | Minoria | 2 | 47,70 | $133 594 | 158,31 |

# Formulário de avaliação de Justiça ambiental

| | |
|---|---|
| Nome do projeto | Projeto de melhoria da estrada de acesso |
| Data prevista de protocolo do MEPA | O Formulário de notificação ambiental expandida (Expanded Environmental Notification, EENF) será protocolado até 30 de Novembro de 2023 |
| Nome do proponente | New England Power Company (NEP) |
| Informações de contato (por exemplo, consultor) | Dan Herzlinger, TRC Companies, Inc.<br>6 Ashley Drive, 1st Floor<br>Scarborough, ME, EUA - 04074<br>+1 (978) 935-8065 |
| Site público do projeto ou outro local físico onde os materiais do projeto podem ser obtidos (se disponíveis) | www. centralmassreliability.com |
| Município e código postal do Projeto (se souber) | Ayer (01432), Shirley (01464), Lancaster (01523), Sterling (01564), West Boylston (01583), Boylston (01505), Shrewsbury (01545), Worcester (01608), Grafton (01519) e Millbury (01527) |
| Tipo de projeto* (liste todos os que se aplicam) | Transmissão de energia - Melhorias na estrada de acesso no âmbito das faixas de servidão existentes |
| O local do projeto está dentro de uma planície de inundação de 100 anos mapeada do FEMA? S/N/Não sei | Sim, em trechos curtos das faixas de servidão espalhadas ao longo da duração do projeto |
| Emissões estimadas de GEE de espaços condicionados (clique **aqui** para acessar uma ferramenta de estimativa de GEE) | Não se aplica – Não são propostos edifícios neste projeto. |

Descrição do projeto

1. Forneça uma breve descrição do projeto, incluindo o tamanho geral do local do projeto e a metragem quadrada dos prédios e estruturas propostos, se souber

A New England Power Company (NEP) propõe realizar melhorias na estrada de acesso no âmbito das faixas de servidão (Right of Way, ROW) existentes para atender às necessidades de acesso de várias linhas de transmissão no centro de Massachusetts. A faixa de servidão é compartilhada por 10 (dez) linhas de transmissão de várias tensões (345 kV, 115 kV e 69 kV), embora nem todas as linhas de transmissão percorram todo o comprimento da faixa de servidão. A faixa de servidão tem aproximadamente 35,7 milhas e geralmente vai na direção sudoeste-nordeste entre a Cross Street em Millbury e a Westford Road em Ayer.

Além de proporcionar acesso seguro e confiável, as melhorias na via de acesso serão utilizadas para apoiar imediatamente projetos de manutenção da NEP nesta faixa de servidão, que são: projeto de restauração da condição de ativo (Asset Condition Refurbishment, ACR) da linha P142/O141, que envolve a substituição de estruturas e fio-terra óptico (Optical Ground Wire, OPGW); e projeto ACR da linha 313/343, que envolve a substituição de estruturas e a instalação de OPGW em duas fases.

Serão necessárias atualizações nas estradas de acesso existentes e a construção de vias para obras novas e permanentes, que ocorrerão dentro da faixa de servidão da concessionária existente para viabilizar o acesso seguro e confiável. A NEP propõe realizar essas melhorias de uma só vez, a fim de garantir eficiência de custo aos nossos clientes, reduzir interdições vicinais e minimizar o ônus regulatório e administrativo. A NEP incluirá os impactos dos três projetos de manutenção no EENF. Nenhuma limpeza de árvores significativa ou expansão da faixa de servidão está prevista como parte deste projeto.

2. Liste os limites previstos de revisão do MEPA (301 CMR 11.03) (se souber)

A obra em linha de transmissão nos projetos é isenta de acordo com a Lei de Proteção de Pântanos e a MEPA para manutenção e substituição de serviços públicos. No entanto, as reformas das vias de acesso existentes e a construção de vias para obras novas e permanentes não são isentas.

**ENF e outra revisão:**

- 301 CMR 11.03(1)(b)(1) – Alteração direta de 25 ou mais acres de terra, a menos que o projeto seja consistente com um plano de conservação agrícola aprovado, plano de corte florestal ou outras práticas agrícolas ou florestais semelhantes geralmente aceitas.
- 301 CMR 11.03(2)(b)(2) – Mais de dois acres de perturbação do habitat prioritário designado, conforme definido em 321 CMR 10.02, que resulta na aceitação de uma espécie em risco ou ameaçada de extinção listada no estado ou espécies de preocupação especial
- 301 CMR 11.03(11)(b) – Qualquer projeto de ½ acre ou mais dentro de um ACEC designado, a menos que o projeto consista exclusivamente em uma única residência familiar.

3. Liste todas as autorizações estaduais, locais e federais previstas necessárias para o projeto (se souber)

| Agência | Permissão, revisão ou aprovação |
|---|---|
| **Federal** | |
| Corpo de Engenheiros do Exército dos EUA (USACE) | Seção 404 Permissão de notificação de pré-construção e consultas nos termos da Seção 106 da Lei Nacional de Preservação Histórica e Seção 7 da Lei de Espécies Ameaçadas |
| Agência de Proteção Ambiental dos Estados Unidos (EPA) | Permissão Geral do Sistema Nacional de Eliminação de Descargas de Poluentes (NPDES) para Descargas de Águas Pluviais e Atividades de Desaguamento de Construção/Plano de Prevenção de Poluição de Águas Pluviais (SWPPP) |
| **Estado** | |
| Escritório Executivo de Energia e Assuntos Ambientais (EEA) | Revisão do MEPA/Certificado da secretaria |
| Departamento de Proteção Ambiental de Massachusetts (MassDEP) | Seção 401 do Certificado Abrangente de Qualidade da Água |
| Departamento de Conservação e Recreação (DCR) | Permissão de acesso à construção |
| Programa de Patrimônio Natural e Espécies Ameaçadas (NHESP) | Permissão de gestão de conservação |
| **Local** | |

| | |
|---|---|
| Comissões de conservação em Ayer, Shirley, Lancaster, Sterling, West Boylston, Boylston, Shrewsbury, Worcester, Grafton e Millbury. | Ordem de Condições de acordo com a Lei de Proteção de Pântanos de Massachusetts (MA WPA) |

4. Identifique as populações e características de Justiça ambiental (minoria, renda, falta de conhecimento de inglês) dentro de 5 milhas (8 km) do local do projeto (você pode anexar um mapa que mostre o raio de 5 milhas a partir do Visualizador de mapas de Justiça ambiental em vez de descrever por escrito)

   Consulte o **Anexo A**

5. Identifique qualquer município ou setor censitário que atenda à definição de "critérios de saúde de vulneráveis de Justiça ambiental" pela Ferramenta de Justiça ambiental localizado totalmente ou parcialmente dentro do raio de 1 milha (1,6 km) do local do projeto

   **Consulte o Anexo B.**

6. Identifique potenciais impactos ambientais e de saúde pública de curto e longo prazo que podem afetar as Populações de Justiça ambiental e qualquer mitigação prevista

As populações de EJ em um raio de 1 milha da faixa de servidão (a área geográfica designada para o projeto) estão no **Anexo C.**

Os possíveis impactos ambientais e de saúde pública do projeto e sua mitigação prevista incluem o seguinte:

**Qualidade da água:**
O projeto incorporará medidas protetoras e preventivas para minimizar e evitar impactos na qualidade da água. A faixa de servidão cruza muitas áreas úmidas, córregos e rios, incluindo o Wachusett Reservoir, que serve como abastecimento público de água para as áreas vizinhas. Para proteger a qualidade da água e essas áreas sensíveis, estradas temporárias serão construídas usando tapetes de construção. Os tapetes de construção geralmente são compostos de vigas de madeira, aparafusados juntos e têm 4 pés de largura por 16 pés de comprimento. Eles são colocados temporariamente sobre o solo e a vegetação. Esses tapetes permitem que máquinas e veículos pesados cruzem áreas sensíveis sem danificar o solo ou as raízes da vegetação e também são colocados de forma a não afetar o fluxo de água nos córregos. Esses tapetes serão removidos quando a construção for concluída e os pântanos serão restaurados. Além disso, as melhores práticas de gestão, como o uso de barreiras de palha, cerca de silte, recursos de gestão de águas pluviais e outras medidas de controle, serão usadas para evitar que o solo e outros materiais sejam transportados para áreas úmidas e riachos. Usando essas melhores práticas de gestão, os impactos na qualidade da água serão insignificantes e temporários e não se espera que causem impactos na saúde pública.

**Proteção do solo e espaço aberto:**
O projeto passa por áreas de terras protegidas e espaços abertos ao redor do reservatório de Wachusett, que são mantidos pelo Departamento de Conservação e Recreação de Massachusetts (DCR). Como as atividades do projeto serão limitadas à faixa de servidão existente, o acesso à terra protegida e ao espaço aberto nas populações EJ não será afetado.

**Ruído:**
As comunidades EJ que têm maior probabilidade de ter impactos temporários de ruído são as comunidades que estão diretamente dentro ou estão localizadas perto da faixa de servidão. Os impactos de ruído associados às atividades do período de construção são de natureza temporária e devem ser mínimos à medida que o trabalho progride ao longo das linhas de transmissão. Quando ocorrer construção adjacente a residências, a NEP notificará os proprietários de terras antes do início do trabalho. As atividades geradoras de ruído serão conduzidas de acordo com quaisquer requisitos locais e estaduais e não se prevê que causem impactos à saúde pública.

**Tráfego:**
Os impactos no tráfego durante a construção do projeto serão menores e intermitentes. As áreas de trabalho serão acessadas principalmente a partir de vias públicas de propriedade de taxa NEP ou de facilidade NEP fora da cidade. O NEP obterá as permissões necessárias do MassDOT para acesso. Uma vez no local, o tráfego de veículos será limitado a dentro ou nas proximidades da faixa de servidão. Como a faixa de servidão é uma instalação não tripulada, não haverá impactos permanentes nos padrões de tráfego ou no uso de estradas existentes e nenhum impacto na saúde pública é previsto a partir do tráfego.

7. Identifique os benefícios do projeto, incluindo os "Benefícios ambientais", conforme definido no 301 CMR 11.02, que podem melhorar as condições ambientais ou a saúde pública da População de Justiça ambiental

Dentre os possíveis “benefícios ambientais” estão:

- Maior resiliência do sistema geral da linha de transmissão como um todo. Ao instalar fundações reforçadas, novas estruturas de comutação e estruturas de substituição aprimoradas, a infraestrutura será mais adequada para suportar ventos fortes e tempestades decorrentes das mudanças climáticas.
- A instalação do OPGW permitirá uma melhor comunicação entre as subestações, resultando em tempo de resposta melhorado durante emergências e interrupções relacionadas a tempestades, o que aumentará a segurança pública.

Outros benefícios deste projeto que não estão expressamente incluídos na definição de “Benefícios ambientais” incluem os seguintes:

- Redução da perturbação geral para proprietários de terras adjacentes, áreas de recursos de pântanos e habitat de espécies raras ao longo do tempo, por meio do planejamento futuro e redução da probabilidade de vários projetos repetidos, reduzindo assim os impactos ambientais e os custos para os clientes da New England Power Company. Os três cronogramas de construção do projeto estão sendo coordenados para que toda a obra possa ser concluída em série.
- A substituição das estruturas e a instalação do OPGW terão o benefício adicional de permitir que mais recursos de energia renovável se conectem ao sistema. A abordagem às mudanças climáticas requer uma grande expansão da energia renovável e da infraestrutura necessária para apoiar e fornecer essa energia. A NEP está tomando medidas ativamente para garantir que seu sistema esteja pronto para enfrentar esse desafio crítico. A substituição de infraestrutura como as linhas 313/343 e P142/O141 ajuda a atingir essa meta.

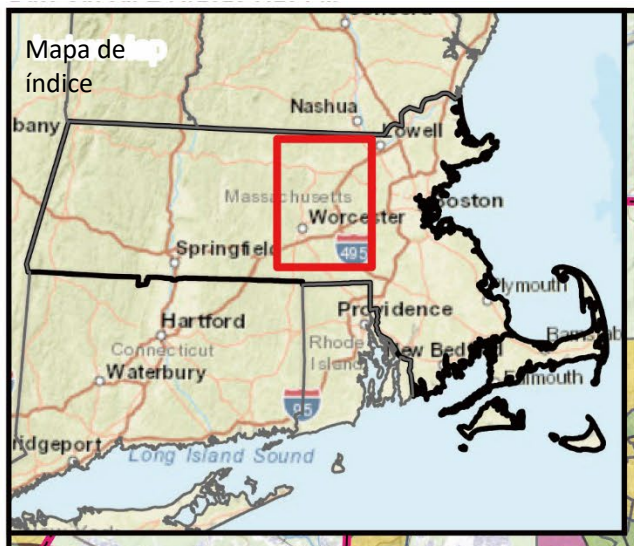
8. Descreva como a comunidade pode organizar uma reunião para discutir o projeto e como a comunidade pode solicitar serviços de interpretação para a reunião. Especifique como solicitar outras acomodações, incluindo reuniões fora do horário comercial e em locais próximos a transportes públicos

Comunidades e membros do público podem acessar informações relacionadas ao projeto das seguintes maneiras:

- O site público www.centralmassreliability.com contém informações sobre os projetos e será atualizado com informações sobre cronogramas dos projetos e outras informações à medida que forem disponibilizadas. O site será traduzido em espanhol, português do Brasil, língua cabo-verdiana (também conhecida como criolo cabo-verdiano) e chinês tradicional.
- O site contém um número de ligação gratuita e endereço de e-mail que são direcionados à equipe de contato na NEP para acompanhamento.
- Uma reunião informativa virtual organizada pela NEP será agendada em breve:
    - Os destinatários deste formulário de triagem "Lista de Referência EJ" receberão informações relacionadas a esta reunião por e-mail. Serão disponibilizadas traduções em espanhol, português do Brasil, língua cabo-verdiana (também conhecida como criolo cabo-verdiano) e chinês tradicional
    - As notificações (incluindo as traduções) desta reunião virtual serão publicadas no(s) jornal(ais) apropriado(s) com circulação para cada município antes da data da reunião.
- Cópias impressas dos materiais do projeto serão disponibilizadas em bibliotecas municipais e/ou prefeituras ou estações de transferência.
- Uma cópia da ficha informativa do projeto será publicada no Centro Espanhol Americano em Leominster, mediante solicitação.
- Mediante solicitação, reuniões presenciais de informações do projeto serão agendadas em locais convenientes ao longo das rotas do projeto à medida que os projetos progredirem.
- Se tiver outras dúvidas, entre em contato pelo telefone +1 (844) 313-3437 ou envie um e-mail para info@centralmassreliability.com

Dentre os destinatários deste formulário estão organizações na Lista de Referência de EJ fornecida pelo Escritório Executivo de Energia e Assuntos Ambientais de Massachusetts de acordo com o Protocolo de Envolvimento Público, bem como a Agência e Outros Revisores. Além disso, este formulário está sendo enviado aos administradores da cidade e a proprietários de imóveis dentro de uma comunidade de EJ que esteja no raio de 1 milha da linha principal 313/343 e P142/O141 e da faixa de servidão da Tap Line.

**RASCUNHO**




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

**Legenda**

- O141
- O141S
- O141S/P142
- O141S/P142S
- O141W
- O142/O141W
- P142N/O141N
- P142S
- Conexão proposta - Linha O141/P142
- Linha 313
- Linha 343
- Raios de 1 e 5 milhas ao redor de linhas
- Limite municipal

**Grupos de blocos para justiça ambiental***

- Minoria
- Renda
- Isolamento do idioma inglês
- Minoria e renda
- Minoria e isolamento do idioma inglês
- Renda e isolamento do idioma inglês
- Minoria, renda e isolamento do idioma inglês

*Indica camadas definidas para transparência

N

1:180.000

7.500 15.000

Pés

# LINHAS O141/P142 E 313/343

## Áreas de justiça ambiental

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

Página 1 de 1

Fonte: EOEEA, 2022

Mapa básico: 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

Anexo B: Critérios de EJ de saúde vulnerável ACR 313/343 e O141/P142 (1 milha)

| Município | Status dos critérios de EJ e saúde vulnerável | Critérios de EJ no tópico de saúde vulnerável atendidos | Taxa no estado por 1.000 |
|---|---|---|---|
| Ayer | Atende a pelo menos um critério de EJ de saúde vulnerável | Taxa de infarto por 10.000 | 41 |
| Boylston | Não atende a nenhum critério de EJ de saúde vulnerável | N/A | N/A |
| Grafton | Não atende a nenhum critério de EJ de saúde vulnerável | N/A | N/A |
| Lancaster | Não atende a nenhum critério de EJ de saúde vulnerável | N/A | N/A |
| Millbury | Não atende a nenhum critério de EJ de saúde vulnerável | N/A | N/A |
| Shirley | Atende a pelo menos um critério de EJ de saúde vulnerável | Taxa de infarto por 10.000 | 35 |
| Shrewsbury | Não atende a nenhum critério de EJ de saúde vulnerável | N/A | N/A |
| Sterling | Não atende a nenhum critério de EJ de saúde vulnerável | N/A | N/A |

| | | | |
|---|---|---|---|
| West Boylston | Não atende a nenhum critério de EJ de saúde vulnerável | N/A | N/A |
| Worcester | Atende a pelo menos um critério de EJ de saúde vulnerável | Taxa de intoxicação por chumbo por 1.000<br>Taxa de peso baixo no nascimento por 1.000<br>Taxa de consultas pediátricas para asma por 10.000 | 22<br>261<br>136 |

**Anexo C: Projeto ACR 313/343 e O141/P142**

**Comunidades de EJ do Departamento de Saúde Pública (Department of Public Health, DPH) de Massachusetts (1 milha)**

| Município | Nome da área geográfica | Descrição dos critérios de EJ | Grupo de blocos | População minoritária (%) | Renda mediana | Porcentagem da renda mediana de MA (%) |
|---|---|---|---|---|---|---|
| Ayer | Grupo de blocos 1, setor censitário 3251.01, Condado de Middlesex | Minoria | 1 | 27,17 | US$ 82.857 | 98,19 |
| Ayer | Grupo de blocos 1, setor censitário 3251.02, Condado de Middlesex | Renda | 1 | 18,65 | US$ 52.120 | 61,76 |
| Ayer | Grupo de blocos 4, setor censitário 3251.02, Condado de Middlesex | Minoria | 4 | 29,37 | US$ 81.500 | 96,58 |
| Ayer | Grupo de blocos 5, setor censitário 3251.02, Condado de Middlesex | Minoria | 5 | 39,61 | US$ 68.462 | 81,13 |
| Shirley | Grupo de blocos 2, setor censitário 3882, Condado de Middlesex | Minoria | 2 | 41,12 | US$ 69.342 | 82,17 |
| Leominster | Grupo de blocos 1, setor censitário 7092.03, Condado de Worcester | Minoria | 1 | 31,19 | US$ 120.833 | 143,19 |
| Leominster | Grupo de blocos 1, setor censitário 7092.04, Condado de Worcester | Minoria | 1 | 43,82 | US$ 92.567 | 109,70 |

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|---|---|---|---|---|---|---|
| Leominster | Grupo de blocos 3, setor censitário 7092.04, Condado de Worcester | Minoria | 3 | 30,41 | US$ 87.559 | 103,76 |
| Lancaster | Grupo de blocos 4, setor censitário 7131, Condado de Worcester | Minoria | 4 | 36,04 | US$ 108.676 | 128,79 |
| Worcester | Grupo de blocos 1, setor censitário 7301, Condado de Worcester | Minoria | 1 | 40,74 | US$ 104.228 | 123,51 |
| Worcester | Grupo de blocos 2, setor censitário 7301, Condado de Worcester | Minoria | 2 | 34,68 | US$ 76.351 | 90,48 |
| Worcester | Grupo de blocos 3, setor censitário 7301, Condado de Worcester | Minoria | 3 | 39,76 | US$ 79.926 | 94,72 |
| Worcester | Grupo de blocos 4, setor censitário 7301, Condado de Worcester | Minoria | 4 | 37,69 | US$ 60.430 | 71,61 |
| Worcester | Grupo de blocos 1, setor censitário 7302, Condado de Worcester | Minoria | 1 | 36,09 | US$ 107.574 | 127,48 |
| Worcester | Grupo de blocos 2, setor censitário 7302, Condado de Worcester | Minoria | 2 | 44,44 | US$ 55.938 | 66,29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo de blocos 3, setor censitário 7302, Condado de Worcester | Minoria, renda e isolamento do idioma inglês | 3 | 25,36 | US$ 44.681 | 52,95 |
| Worcester | Grupo de blocos 5, setor censitário 7302, Condado de Worcester | Minoria | 5 | 26,31 | US$ 68,917 | 81,67 |
| Worcester | Grupo de blocos 1, setor censitário 7303, Condado de Worcester | Minoria | 1 | 39,38 | US$ 55.733 | 66,05 |
| Worcester | Grupo de blocos 2, setor censitário 7303, Condado de Worcester | Minoria | 2 | 40,54 | US$ 79.118 | 93,76 |
| Worcester | Grupo de blocos 3, setor censitário 7303, Condado de Worcester | Minoria | 3 | 25,48 | US$ 87.625 | 103,84 |
| Worcester | Grupo de blocos 4, setor censitário 7303, Condado de Worcester | Minoria | 4 | 39,07 | US$ 55.682 | 65,99 |
| Worcester | Grupo de blocos 5, setor censitário 7303, Condado de Worcester | Minoria | 5 | 31,68 | US$ 87.656 | 103,88 |
| Worcester | Grupo de blocos 1, setor censitário 7304.01, Condado de Worcester | Minoria | 1 | 40,48 | US$ 67.969 | 80,55 |

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|---|---|---|---|---|---|---|
| Worcester | Grupo de blocos 2, setor censitário 7304.01, Condado de Worcester | Minoria | 2 | 32,21 | US$ 87.875 | 104,14 |
| Worcester | Grupo de blocos 3, setor censitário 7304.01, Condado de Worcester | Minoria e renda | 3 | 75,44 | US$ 31.365 | 37,17 |
| Worcester | Grupo de blocos 1, setor censitário 7304.02, Condado de Worcester | Minoria e renda | 1 | 52,94 | US$ 54.875 | 65,03 |
| Worcester | Grupo de blocos 2, setor censitário 7304.02, Condado de Worcester | Minoria | 2 | 69,64 | US$ 61.607 | 73,01 |
| Worcester | Grupo de blocos 1, setor censitário 7305, Condado de Worcester | Minoria e renda | 1 | 42,03 | US$ 49.046 | 58,12 |
| Worcester | Grupo de blocos 2, setor censitário 7305, Condado de Worcester | Minoria | 2 | 70,51 | US$ 59.375 | 70,36 |
| Worcester | Grupo de blocos 3, setor censitário 7305, Condado de Worcester | Minoria e renda | 3 | 41,78 | US$ 44.125 | 52,29 |
| Worcester | Grupo de blocos 2, setor censitário 7306, Condado de Worcester | Renda | 2 | 21,69 | US$ 17.179 | 20,36 |

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|---|---|---|---|---|---|---|
| Worcester | Grupo de blocos 5, setor censitário 7306, Condado de Worcester | Minoria e renda | 5 | 24,91 | US$ 34.952 | 41,42 |
| Worcester | Grupo de blocos 1, setor censitário 7316.01, Condado de Worcester | Minoria e renda | 1 | 48,36 | US$ 17.012 | 20,16 |
| Worcester | Grupo de blocos 5, setor censitário 7316.01, Condado de Worcester | Minoria e renda | 5 | 41,82 | US$ 44.145 | 52,31 |
| Worcester | Grupo de blocos 1, setor censitário 7316.02, Condado de Worcester | Minoria e renda | 1 | 34,71 | US$ 45.135 | 52,58 |
| Worcester | Grupo de blocos 2, setor censitário 7316.02, Condado de Worcester | Minoria, renda e isolamento do idioma inglês | 2 | 34,35 | US$ 25.921 | 30,72 |
| Worcester | Grupo de blocos 2, setor censitário 7317, Condado de Worcester | Minoria e renda | 2 | 46,12 | US$ 34.856 | 41,31 |
| Worcester | Grupo de blocos 1, setor censitário 7318.01, Condado de Worcester | Minoria e renda | 1 | 44,13 | US$ 47.208 | 55,94 |
| Worcester | Grupo de blocos 2, setor censitário 7318.01, Condado de Worcester | Minoria, renda e isolamento do idioma inglês | 2 | 50.43 | US$ 15.176 | 17,98 |

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|---|---|---|---|---|---|---|
| Worcester | Grupo de blocos 2, setor censitário 7318.02, Condado de Worcester | Minoria, renda e isolamento do idioma inglês | 2 | 91,93 | US$ 11.543 | 13,68 |
| Worcester | Grupo de blocos 3, setor censitário 7318.02, Condado de Worcester | Minoria | 3 | 77,00 | US$ 97.885 | 114,03 |
| Worcester | Grupo de blocos 1, setor censitário 7319, Condado de Worcester | Minoria e renda | 1 | 68,79 | US$ 33.804 | 40,06 |
| Worcester | Grupo de blocos 2, setor censitário 7319, Condado de Worcester | Minoria e renda | 2 | 70,71 | US$ 53.375 | 63,25 |
| Worcester | Grupo de blocos 3, setor censitário 7319, Condado de Worcester | Minoria e renda | 3 | 74,53 | US$ 43.646 | 51,72 |
| Worcester | Grupo de blocos 4, setor censitário 7319, Condado de Worcester | Minoria e renda | 4 | 71,39 | US$ 37.429 | 44,36 |
| Worcester | Grupo de blocos 1, setor censitário 7320.01, Condado de Worcester | Minoria, renda e isolamento do idioma inglês | 1 | 85,17 | US$ 15.718 | 18,63 |
| Worcester | Grupo de blocos 2, setor censitário 7320.01, Condado de Worcester | Minoria e renda | 2 | 73,48 | US$ 30.000 | 35,55 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo de blocos 1, setor censitário 7320.02, Condado de Worcester | Minoria | 1 | 62,88 | US$ 65.965 | 78,17 |
| Worcester | Grupo de blocos 2, setor censitário 7320.02, Condado de Worcester | Minoria | 2 | 39,74 | US$ 60.893 | 72,16 |
| Worcester | Grupo de blocos 3, setor censitário 7320.02, Condado de Worcester | Minoria | 3 | 33,37 | US$ 67.188 | 79,62 |
| Worcester | Grupo de blocos 1, setor censitário 7322.01, Condado de Worcester | Minoria e renda | 1 | 35,56 | US$ 45.224 | 53,59 |
| Worcester | Grupo de blocos 2, setor censitário 7322.01, Condado de Worcester | Minoria | 2 | 47,57 | US$ 76.250 | 90,36 |
| Worcester | Grupo de blocos 1, setor censitário 7322.02, Condado de Worcester | Minoria e renda | 1 | 41,89 | US$ 51.163 | 60,63 |
| Worcester | Grupo de blocos 2, setor censitário 7322.02, Condado de Worcester | Minoria | 2 | 38,89 | US$ 92.344 | 109,43 |
| Worcester | Grupo de blocos 1, setor censitário 7322.03, Condado de Worcester | Minoria e isolamento do idioma inglês | 1 | 56,73 | US$ 75,401 | 89,35 |

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|---|---|---|---|---|---|---|
| Worcester | Grupo de blocos 2, setor censitário 7322.03, Condado de Worcester | Minoria e isolamento do idioma inglês | 2 | 51,76 | US$ 68.902 | 81,65 |
| Worcester | Grupo de blocos 3, setor censitário 7322.03, Condado de Worcester | Minoria e renda | 3 | 68,75 | US$ 39.732 | 47,08 |
| Worcester | Grupo de blocos 1, setor censitário 7323.01, Condado de Worcester | Minoria | 1 | 42,72 | US$ 61.607 | 73,01 |
| Worcester | Grupo de blocos 2, setor censitário 7323.01, Condado de Worcester | Minoria | 2 | 35,12 | US$ 68.795 | 81,53 |
| Worcester | Grupo de blocos 1, setor censitário 7323.02, Condado de Worcester | Minoria e renda | 1 | 56,12 | US$ 39.207 | 46,46 |
| Worcester | Grupo de blocos 2, setor censitário 7323.02, Condado de Worcester | Minoria | 2 | 46,02 | US$ 77.561 | 91,91 |
| Worcester | Grupo de blocos 1, setor censitário 7328.01, Condado de Worcester | Minoria | 1 | 32,93 | US$ 77.821 | 92,22 |
| Worcester | Grupo de blocos 2, setor censitário 7328.01, Condado de Worcester | Minoria | 2 | 42,81 | US$ 70.766 | 83,86 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Grupo de blocos 1, setor censitário 7328.02, Condado de Worcester | Minoria | 1 | 41,79 | US$ 63.676 | 75,46 |
| Millbury | Grupo de blocos 1, setor censitário 7372, Condado de Worcester | Renda | 1 | 16,65 | US$ 53.875 | 63,84 |
| Millbury | Grupo de blocos 2, setor censitário 7372, Condado de Worcester | Renda | 2 | 13,73 | US$ 53.375 | 63,25 |
| Shrewsbury | Grupo de blocos 2, setor censitário 7391.01, Condado de Worcester | Minoria | 2 | 32,05 | US$ 72.425 | 85,83 |
| Shrewsbury | Grupo de blocos 3, setor censitário 7391.01, Condado de Worcester | Minoria | 3 | 44,44 | US$ 131.200 | 155,48 |
| Shrewsbury | Grupo de blocos 1, setor censitário 7391.02, Condado de Worcester | Minoria | 1 | 57,23 | US$ 148.523 | 176,01 |
| Shrewsbury | Grupo de blocos 2, setor censitário 7391.02, Condado de Worcester | Minoria | 2 | 58,24 | US$ 100.313 | 118,88 |
| Shrewsbury | Grupo de blocos 1, setor censitário 7392.01, Condado de Worcester | Minoria | 1 | 35,00 | US$ 80.756 | 95,70 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Shrewsbury | Grupo de blocos 2, setor censitário 7392.01, Condado de Worcester | Minoria | 2 | 52,80 | US$ 74.873 | 88,73 |
| Shrewsbury | Grupo de blocos 1, setor censitário 7392.02, Condado de Worcester | Minoria | 1 | 40,31 | US$ 94.946 | 112,52 |
| Shrewsbury | Grupo de blocos 2, setor censitário 7392.02, Condado de Worcester | Minoria | 2 | 40,02 | US$ 92.500 | 109,62 |
| Shrewsbury | Grupo de blocos 2, setor censitário 7393, Condado de Worcester | Minoria | 2 | 38,18 | US$ 85.625 | 101,47 |
| Shrewsbury | Grupo de blocos 4, setor censitário 7395, Condado de Worcester | Minoria | 4 | 29,78 | US$ 114.198 | 135,33 |
| Harvard | Grupo de blocos 2, setor censitário 7614.02, Condado de Worcester | Minoria | 2 | 47,70 | US$ 133.594 | 158,31 |

# 环境正义筛查表

| | |
|---|---|
| 项目名 | 通路改善工程 |
| 预计在 MEPA 备案日期 | 扩充后的环境通知表格 (EENF) 将于 2023 年 11 月 30 日前备案。 |
| 支持者姓名 | New England Power Company (NEP) |
| 联系人信息（例如顾问） | Dan Herzlinger, TRC Companies, Inc.<br>6 Ashley Drive, 1st Floor<br>Scarborough, ME 04074<br>978-935-8065 |
| 有关项目的公共网站或可以获得项目相关资料的其他实际地点（如果有的话） | www. centralmassreliability.com |
| 项目所在的市镇和邮政编码（如果知道） | Ayer (01432)、Shirley (01464)、Lancaster (01523)、Sterling (01564)、West Boylston (01583)、Boylston (01505)、Shrewsbury (01545)、Worcester (01608)、Grafton (01519) 和 Millbury (01527) |
| 项目类型*（请列出所有适用的） | 电力传输 - 现有路权范围内的通路改善 |
| 项目地点是否在百年FEMA洪灾平原区地图范围内？ 是/否/未知 | 是，在沿项目一带散布的少部分路权路段中 |
| 空调空间的温室气体排放量估算（点击**此处**获取温室气体估算工具） | 不适用 - 本项目不含任何拟建建筑。 |

有关项目的描述

1. 提供简短的项目描述，包括项目场地的总体规模以及拟建建筑物和结构的平方英尺（如果知道的话）。

New England Power Company (NEP) 建议在现有路权 (ROW) 范围内改善通路，以满足马萨诸塞州中部几条输电线路的接入需求。共有十 (10) 条不同电压（345 kV、115 kV 和 69 kV）的输电线路共享这一 ROW，但并非所有传输线路都贯穿整个 ROW。ROW 长约 35.7 英里，整体上自西南向东北运行，起始地点在 Millbury 的 Cross Street，终止地点在 Ayer 的 Westford Road。

改善通路不仅能提供长期安全可靠的通道，还将及时地支持该 ROW 范围内的 NEP 维护项目：涉及更换结构和光缆地线 (OPGW) 的“P142/O141 资产状况翻新 (ACR) 项目”以及涉及分两个阶段更换结构并安装 OPGW 的“313/343 线路 ACR 项目”。

为了提供安全可靠的通道，有必要升级现有通路，并在现有的公用 ROW 内铺设新的永久地垫。NEP 建议一次性实施上述改善项目，以便为客户提供成本效益，减少对邻近地区的干扰，并将监管和管理负担降至最低。NEP 将把三个维护项目所产生的影响纳入 EENF。本项目不包含拟定的大规模树木清理或 ROW 扩展。

2. 列出预期的 MEPA 审查阈值（根据 301 CMR 11.03 条规）（如果知道的话）

根据美国《湿地保护法》和 MEPA，该项目中的输电线路工作可免于审批，以维护和更换公用设施。但是，升级现有通路以及铺设新的永久地垫的工作却不能免于审批。

**ENF 和其他审查：**

- 301 CMR 11.03(1)(b)(1) - 直接改变 25 英亩或更大面积的土地（例外情况：该项目与已批准的保护性农场计划/森林砍伐计划/受到普遍接受的农业或林业类似做法一致）。
- 301 CMR 11.03(2)(b)(2) - 321 CMR 10.02 中定义的指定优先栖息地受到超过两英亩的干扰，导致国家列入名录的濒危物种/受威胁物种/特别关注物种受到影响
- 301 CMR 11.03(11)(b) - 任何覆盖指定 ACEC 的 1/2 或更大面积的项目（例外情况：该项目仅包括一个单户住宅）。

3. 列出项目所在州、地方和联邦预期需要的许可证（如果知道的话）

| 机构 | 许可、审查或批准证明 |
|---|---|
| **联邦** | |
| 美国陆军工兵部队 (USACE) | 404 条款施工前通知许可证以及依据美国《国家历史保护法》第 106 条和美国《濒危物种法》第 7 条进行的磋商 |
| 美国国家环境保护局 (EPA) | 美国国家污染物排放消除系统 (NPDES) 针对雨水排放和施工排水活动/雨水污染预防计划 (SWPPP) 的一般许可证 |
| **州** | |
| 能源和环境事务执行办公室 (EEA) | MEPA 审查/州务卿认证证书 |
| 马萨诸塞州环境保护部 (MassDEP) | 401 条款综合水质证书 |
| 保护和娱乐部 (DCR) | 施工准入许可证 |
| 自然遗产和濒危物种计划 (NHESP) | 环境保护管理许可证 |
| **地方** | |
| Ayer、Shirley、Lancaster、Sterling、West Boylston、Boylston、Shrewsbury、Worcester、Grafton 和 Millbury 的环境保护委员会。 | 《马萨诸塞州湿地保护法》(MA WPA) 规定的《环境法令》 |

4. 请指认项目现场 5 英里内的环境正义人口和特征（少数民族、收入、英语隔离）（可以附上 EJ Maps Viewer 5 英里半径的地图并指认来代替需要的叙述）

| |
|---|
| 见**附件 A** |
| 5. 在 DPH 环境正义工具中确定全部或部分位于项目场地 1 英里半径内的任何符合“弱势健康环境正义标准”定义的城市或人口普查区<br><br>**见附件 B** |

6. 请确定可能影响环境正义人口的潜在短期和长期环境和公共卫生影响以及任何预期的缓解措施

在 ROW（项目的指定地理区域）半径 1 英里内的环境正义人口见**附件 C**。

项目对环境和公共卫生的潜在影响以及预期的缓解措施包括以下内容：

**水质：**
该项目将包含保护和预防措施，以尽量减少和避免对水质的影响。ROW 穿过许多湿地区域、溪流和河流，包括作为周边地区公共水源的 Wachusett 水库。为了保护水质和这些敏感地区，将使用施工垫建造临时道路。施工垫通常由螺栓连接的木梁组成，宽 4 英尺，长 16 英尺。它们被临时铺设在地面和植被之上。铺设这种垫层后，重型机器和车辆穿过敏感地区将不会损害土壤或植被根部，而且垫层放置的方式也不会影响溪流的水流。施工完成后，将移除这些垫层并恢复湿地。此外，还将采用最佳管理方法，如使用草垛、淤泥围栏、雨水管理设施和其他控制措施，以防止将土壤和其他物质运入湿地和溪流。使用这些最佳管理方法，项目对水质的影响将会是暂时且微乎其微的，预计不会对公众健康造成影响。

**土地保护和开放空间：**
该项目穿过由马萨诸塞州保护和娱乐部 (DCR) 维护的 Wachusett 水库周围的受保护土地和开放空间区域。由于项目活动限制在现有 ROW 范围内，不会影响环境正义人口通往受保护土地和开放空间。

**噪声：**
最有可能受到临时噪音影响的环境正义社区是直接位于 ROW 内或位于 ROW 附近的社区。输电线路工作推进的过程中，与施工期活动有关的噪音影响不仅具有暂时性，而且是预期中最小的。如果施工将于住宅附近开展，NEP 将在工作开始前通知土地所有者。产生噪音的活动将按照所在地方和州的要求进行，预计不会对公众健康造成影响。

**交通：**
项目施工期间将对交通产生轻微和间歇性的影响。进入工作区的道路主要为 NEP 永久拥有和拥有地役权的镇外道路。NEP 将从 MassDOT 获得必要的准入许可。车辆一旦到达现场，将限制其在 ROW 范围内或 ROW 附近行驶。由于 ROW 是无人值守的场所，不会对交通模式或现有道路的使用产生永久性影响，预计不会因交通而对公众健康产生影响。

7. 请确定项目益处，包括 301 CMR 11.02 中定义的“环境效益”，这可能会改善环境正义人口的环境条件或公共健康

潜在的“环境效益”包括以下内容：

- 提高整个大规模输电线路系统的韧性。通过安装改进的地基、新的开关结构和升级的替换结构，这些基础设施将更适合承受气候变化带来的强风和风暴事件。
- 安装 OPGW 后，各分站之间可以更好地沟通，在面对暴风雨有关的紧急情况和停电时有更快的反应速度，从而提升了公共安全水平。

本项目的其他效益没有明确列入“环境效益”的定义中，包括以下内容：

- 通过面向未来的规划、降低多次开展重复项目的可能性，以减少对邻近土地所有者、湿地资源区和稀有物种栖息地的整体干扰，从而减少环境影响、减少 New England Power Company 客户的成本。现正在协调这三个项目的施工进度，以便能够有条不紊地完成所有工作。
- 更换结构和安装 OPGW 将产生额外的效益，即允许更多的可再生能源资源接入系统。大力发展可再生能源与支持可再生能源发展和运输的基础设施对于应对气候变化而言必不可少。NEP 正在积极采取措施，确保其系统做好迎接这一关键挑战的准备。更换 313/343 和 P142/O141 线路等基础设施有助于实现这一目标。

8. 描述社区如何要求召开会议讨论项目，以及社区如何在会议上要求口语翻译服务。请指定如何要求获得其他通融条件，包括在工作时间后和在公共交通附近的地点开会。

社区和公众成员可以通过以下方式获得与项目有关的信息：

- 公共网站：www.centralmassreliability.com，提供了有关项目的信息，并将在启用后更新项目时间表和其他信息。该网站将被翻译成西班牙语、巴西葡萄牙语、佛得角语（又称西班牙语和葡萄牙克里奥尔语）和中文。
- 该网站载有可免费拨打的电话号码和电子邮件地址，用以直接联系 NEP 的外联团队来咨询后续工作。
- 由 NEP 主办的线上信息会议将安排在不久的将来：
    - 本筛查表的接收者，即“环境正义征询名单”上的人将通过电子邮件收到与本次会议有关的信息。将提供西班牙语、巴西葡萄牙语、佛得角语（又称西班牙语和葡萄牙克里奥尔语）和中文的翻译。
    - 举办日期前，本次线上会议的通知（包括译本）将发布在发行于各个城市的相应报纸上。
- 市政图书馆和/或市政厅或转运站将提供项目材料的纸质版本。
- 应 Leominster 的西班牙裔美国人中心的要求，该中心将张贴该项目的概况说明。
- 根据要求，项目推进的过程中，将在项目沿线的方便地点安排项目信息线下会议。
- 如果您有其他问题，请联系 844-313-3437 或给我们发电子邮件：info@centralmassreliability.com

此表格的接收者包括马萨诸塞州能源和环境事务执行办公室根据《公众参与方案》(Public Involvement Protocol) 提供的“环境正义征询名单”上的组织以及机构和其他审核人。此外，本表将发送给 313/343 和 P142/O141 主线和分接线路 ROW 的 1 英里半径范围内的城镇管理者和环境正义社区内的土地所有者。

草案

索引图

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

图例

- O141
- O141S
- O141S/P142
- O141S/P142S
- O141W
- O142/O141W
- P142N/O141N
- P142S
- 拟连接线路 O141/P142
- 313 线
- 343 线
- 线路周围一英里和五英里半径区域
- 市镇边界

环境正义区域组*

- 少数民族
- 收入
- 英语隔离
- 少数民族和收入
- 少数民族和英语隔离
- 收入和英语隔离
- 少数民族、收入和英语隔离

*表示图层设置为透明

N

1:180,000

0 7,500 15,000

英尺

# O141/P142 和 313/343 线路

## 环境正义区域

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

第 1 页，共 1 页

来源：EOEEA, 2022

底图：World_Street_Map: Esri、HERE、Garmin、NGA、USGS、NPS
USGSTopo：USGS 美国国家地图库：国家边界数据集、3DEP 高程计划、地名信息系统、国家水文地理数据集、国家土地覆盖数据库、国家结构

nationalgrid TRC

附件 B：313/343 和 O141/P142 ACR 的弱势健康环境正义标准（1 英里）

| 市镇 | 环境正义和弱势健康环境正义标准状态 | 符合的弱势健康环境正义标准 | 在全州每 1000 人中的占比 |
|---|---|---|---|
| Ayer | 符合至少一个弱势健康环境正义标准 | 心脏病发作率（每 10000 人中） | 41 |
| Boylston | 不符合任何弱势健康环境正义标准 | 不适用 | 不适用 |
| Grafton | 不符合任何弱势健康环境正义标准 | 不适用 | 不适用 |
| Lancaster | 不符合任何弱势健康环境正义标准 | 不适用 | 不适用 |
| Millbury | 不符合任何弱势健康环境正义标准 | 不适用 | 不适用 |
| Shirley | 符合至少一个弱势健康环境正义标准 | 心脏病发作率（每 10000 人中） | 35 |
| Shrewsbury | 不符合任何弱势健康环境正义标准 | 不适用 | 不适用 |
| Sterling | 不符合任何弱势健康环境正义标准 | 不适用 | 不适用 |

| | | | |
|---|---|---|---|
| West Boylston | 不符合任何弱势健康环境正义标准 | 不适用 | 不适用 |
| Worcester | 符合至少一个弱势健康环境正义标准 | 铅中毒率（每 1000 人中）<br>低出生体重率（每 1000 人中）<br>小儿哮喘急诊科就诊率（每 10000 人中） | 22<br>261<br>136 |

**附件 C：313/343 和 O141/P142 ACR 项目**
**马萨诸塞州公共卫生部 (DPH) 环境正义社区（1 英里）**

| 市镇 | 地理区域名称 | 环境正义标准描述 | 区域组 | 少数民族人口 (%) | 收入中位数 | 占 MA 收入中位数百分比 (%) |
|---|---|---|---|---|---|---|
| Ayer | Middlesex 县，3251.01 人口普查区，第 1 区域组 | 少数民族 | 1 | 27.17 | $82,857 | 98.19 |
| Ayer | Middlesex 县，3251.02 人口普查区，第 1 区域组 | 收入 | 1 | 18.65 | $52,120 | 61.76 |
| Ayer | Middlesex 县，3251.02 人口普查区，第 4 区域组 | 少数民族 | 4 | 29.37 | $81,500 | 96.58 |
| Ayer | Middlesex 县，3251.02 人口普查区，第 5 区域组 | 少数民族 | 5 | 39.61 | $68,462 | 81.13 |
| Shirley | Middlesex 县，3882 人口普查区，第 2 区域组 | 少数民族 | 2 | 41.12 | $69,342 | 82.17 |
| Leominster | Worcester 县，7092.03 人口普查区，第 1 区域组 | 少数民族 | 1 | 31.19 | $120,833 | 143.19 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Leominster | Worcester 县，7092.04 人口普查区，第 1 区域组 | 少数民族 | 1 | 43.82 | $92,567 | 109.70 |
| Leominster | Worcester 县，7092.04 人口普查区，第 3 区域组 | 少数民族 | 3 | 30.41 | $87,559 | 103.76 |
| Lancaster | Worcester 县，7131 人口普查区，第 4 区域组 | 少数民族 | 4 | 36.04 | $108,676 | 128.79 |
| Worcester | Worcester 县，7301 人口普查区，第 1 区域组 | 少数民族 | 1 | 40.74 | $104,228 | 123.51 |
| Worcester | Worcester 县，7301 人口普查区，第 2 区域组 | 少数民族 | 2 | 34.68 | $76,351 | 90.48 |
| Worcester | Worcester 县，7301 人口普查区，第 3 区域组 | 少数民族 | 3 | 39.76 | $79,926 | 94.72 |
| Worcester | Worcester 县，7301 人口普查区，第 4 区域组 | 少数民族 | 4 | 37.69 | $60,430 | 71.61 |
| Worcester | Worcester 县，7302 人口普查区，第 1 区域组 | 少数民族 | 1 | 36.09 | $107,574 | 127.48 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Worcester 县，7302 人口普查区，第 2 区域组 | 少数民族 | 2 | 44.44 | $55,938 | 66.29 |
| Worcester | Worcester 县，7302 人口普查区，第 3 区域组 | 少数民族、收入和英语隔离 | 3 | 25.36 | $44,681 | 52.95 |
| Worcester | Worcester 县，7302 人口普查区，第 5 区域组 | 少数民族 | 5 | 26.31 | $68,917 | 81.67 |
| Worcester | Worcester 县，7303 人口普查区，第 1 区域组 | 少数民族 | 1 | 39.38 | $55,733 | 66.05 |
| Worcester | Worcester 县，7303 人口普查区，第 2 区域组 | 少数民族 | 2 | 40.54 | $79,118 | 93.76 |
| Worcester | Worcester 县，7303 人口普查区，第 3 区域组 | 少数民族 | 3 | 25.48 | $87,625 | 103.84 |
| Worcester | Worcester 县，7303 人口普查区，第 4 区域组 | 少数民族 | 4 | 39.07 | $55,682 | 65.99 |
| Worcester | Worcester 县，7303 人口普查区，第 5 区域组 | 少数民族 | 5 | 31.68 | $87,656 | 103.88 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Worcester 县，7304.01 人口普查区，第 1 区域组 | 少数民族 | 1 | 40.48 | $67,969 | 80.55 |
| Worcester | Worcester 县，7304.01 人口普查区，第 2 区域组 | 少数民族 | 2 | 32.21 | $87,875 | 104.14 |
| Worcester | Worcester 县，7304.01 人口普查区，第 3 区域组 | 少数民族和收入 | 3 | 75.44 | $31,365 | 37.17 |
| Worcester | Worcester 县，7304.02 人口普查区，第 1 区域组 | 少数民族和收入 | 1 | 52.94 | $54,875 | 65.03 |
| Worcester | Worcester 县，7304.02 人口普查区，第 2 区域组 | 少数民族 | 2 | 69.64 | $61,607 | 73.01 |
| Worcester | Worcester 县，7305 人口普查区，第 1 区域组 | 少数民族和收入 | 1 | 42.03 | $49,046 | 58.12 |
| Worcester | Worcester 县，7305 人口普查区，第 2 区域组 | 少数民族 | 2 | 70.51 | $59,375 | 70.36 |
| Worcester | Worcester 县，7305 人口普查区，第 3 区域组 | 少数民族和收入 | 3 | 41.78 | $44,125 | 52.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Worcester 县，7306 人口普查区，第 2 区域组 | 收入 | 2 | 21.69 | $17,179 | 20.36 |
| Worcester | Worcester 县，7306 人口普查区，第 5 区域组 | 少数民族和收入 | 5 | 24.91 | $34,952 | 41.42 |
| Worcester | Worcester 县，7316.01 人口普查区，第 1 区域组 | 少数民族和收入 | 1 | 48.36 | $17,012 | 20.16 |
| Worcester | Worcester 县，7316.01 人口普查区，第 5 区域组 | 少数民族和收入 | 5 | 41.82 | $44,145 | 52.31 |
| Worcester | Worcester 县，7316.02 人口普查区，第 1 区域组 | 少数民族和收入 | 1 | 34.71 | $45,135 | 52.58 |
| Worcester | Worcester 县，7316.02 人口普查区，第 2 区域组 | 少数民族、收入和英语隔离 | 2 | 34.35 | $25,921 | 30.72 |
| Worcester | Worcester 县，7317 人口普查区，第 2 区域组 | 少数民族和收入 | 2 | 46.12 | $34,856 | 41.31 |
| Worcester | Worcester 县，7318.01 人口普查区，第 1 区域组 | 少数民族和收入 | 1 | 44.13 | $47,208 | 55.94 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Worcester 县，7318.01 人口普查区，第 2 区域组 | 少数民族、收入和英语隔离 | 2 | 50.43 | $15,176 | 17.98 |
| Worcester | Worcester 县，7318.02 人口普查区，第 2 区域组 | 少数民族、收入和英语隔离 | 2 | 91.93 | $11,543 | 13.68 |
| Worcester | Worcester 县，7318.02 人口普查区，第 3 区域组 | 少数民族 | 3 | 77.00 | $97,885 | 114.03 |
| Worcester | Worcester 县，7319 人口普查区，第 1 区域组 | 少数民族和收入 | 1 | 68.79 | $33,804 | 40.06 |
| Worcester | Worcester 县，7319 人口普查区，第 2 区域组 | 少数民族和收入 | 2 | 70.71 | $53,375 | 63.25 |
| Worcester | Worcester 县，7319 人口普查区，第 3 区域组 | 少数民族和收入 | 3 | 74.53 | $43,646 | 51.72 |
| Worcester | Worcester 县，7319 人口普查区，第 4 区域组 | 少数民族和收入 | 4 | 71.39 | $37,429 | 44.36 |
| Worcester | Worcester 县，7320.01 人口普查区，第 1 区域组 | 少数民族、收入和英语隔离 | 1 | 85.17 | $15,718 | 18.63 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Worcester 县，7320.01 人口普查区，第 2 区域组 | 少数民族和收入 | 2 | 73.48 | $30,000 | 35.55 |
| Worcester | Worcester 县，7320.02 人口普查区，第 1 区域组 | 少数民族 | 1 | 62.88 | $65,965 | 78.17 |
| Worcester | Worcester 县，7320.02 人口普查区，第 2 区域组 | 少数民族 | 2 | 39.74 | $60,893 | 72.16 |
| Worcester | Worcester 县，7320.02 人口普查区，第 3 区域组 | 少数民族 | 3 | 33.37 | $67,188 | 79.62 |
| Worcester | Worcester 县，7322.01 人口普查区，第 1 区域组 | 少数民族和收入 | 1 | 35.56 | $45,224 | 53.59 |
| Worcester | Worcester 县，7322.01 人口普查区，第 2 区域组 | 少数民族 | 2 | 47.57 | $76,250 | 90.36 |
| Worcester | Worcester 县，7322.02 人口普查区，第 1 区域组 | 少数民族和收入 | 1 | 41.89 | $51,163 | 60.63 |
| Worcester | Worcester 县，7322.02 人口普查区，第 2 区域组 | 少数民族 | 2 | 38.89 | $92,344 | 109.43 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Worcester 县，7322.03 人口普查区，第 1 区域组 | 少数民族和英语隔离 | 1 | 56.73 | $75,401 | 89.35 |
| Worcester | Worcester 县，7322.03 人口普查区，第 2 区域组 | 少数民族和英语隔离 | 2 | 51.76 | $68,902 | 81.65 |
| Worcester | Worcester 县，7322.03 人口普查区，第 3 区域组 | 少数民族和收入 | 3 | 68.75 | $39,732 | 47.08 |
| Worcester | Worcester 县，7323.01 人口普查区，第 1 区域组 | 少数民族 | 1 | 42.72 | $61,607 | 73.01 |
| Worcester | Worcester 县，7323.01 人口普查区，第 2 区域组 | 少数民族 | 2 | 35.12 | $68,795 | 81.53 |
| Worcester | Worcester 县，7323.02 人口普查区，第 1 区域组 | 少数民族和收入 | 1 | 56.12 | $39,207 | 46.46 |
| Worcester | Worcester 县，7323.02 人口普查区，第 2 区域组 | 少数民族 | 2 | 46.02 | $77,561 | 91.91 |
| Worcester | Worcester 县，7328.01 人口普查区，第 1 区域组 | 少数民族 | 1 | 32.93 | $77,821 | 92.22 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Worcester | Worcester 县，7328.01 人口普查区，第 2 区域组 | 少数民族 | 2 | 42.81 | $70,766 | 83.86 |
| Worcester | Worcester 县，7328.02 人口普查区，第 1 区域组 | 少数民族 | 1 | 41.79 | $63,676 | 75.46 |
| Millbury | Worcester 县，7372 人口普查区，第 1 区域组 | 收入 | 1 | 16.65 | $53,875 | 63.84 |
| Millbury | Worcester 县，7372 人口普查区，第 2 区域组 | 收入 | 2 | 13.73 | $53,375 | 63.25 |
| Shrewsbury | Worcester 县，7391.01 人口普查区，第 2 区域组 | 少数民族 | 2 | 32.05 | $72,425 | 85.83 |
| Shrewsbury | Worcester 县，7391.01 人口普查区，第 3 区域组 | 少数民族 | 3 | 44.44 | $131,200 | 155.48 |
| Shrewsbury | Worcester 县，7391.02 人口普查区，第 1 区域组 | 少数民族 | 1 | 57.23 | $148,523 | 176.01 |
| Shrewsbury | Worcester 县，7391.02 人口普查区，第 2 区域组 | 少数民族 | 2 | 58.24 | $100,313 | 118.88 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Shrewsbury | Worcester 县，7392.01 人口普查区，第 1 区域组 | 少数民族 | 1 | 35.00 | $80,756 | 95.70 |
| Shrewsbury | Worcester 县，7392.01 人口普查区，第 2 区域组 | 少数民族 | 2 | 52.80 | $74,873 | 88.73 |
| Shrewsbury | Worcester 县，7392.02 人口普查区，第 1 区域组 | 少数民族 | 1 | 40.31 | $94,946 | 112.52 |
| Shrewsbury | Worcester 县，7392.02 人口普查区，第 2 区域组 | 少数民族 | 2 | 40.02 | $92,500 | 109.62 |
| Shrewsbury | Worcester 县，7393 人口普查区，第 2 区域组 | 少数民族 | 2 | 38.18 | $85,625 | 101.47 |
| Shrewsbury | Worcester 县，7395 人口普查区，第 4 区域组 | 少数民族 | 4 | 29.78 | $114,198 | 135.33 |
| Harvard | Worcester 县，7614.02 人口普查区，第 2 区域组 | 少数民族 | 2 | 47.70 | $133,594 | 158.31 |

# Appendix G: RMAT Resilience Design Tool Report

# Climate Resilience Design Standards Tool Project Report

**National Grid Line 313/343 & P142/O141 Transmission Line ACR and Flyover Switch Project**

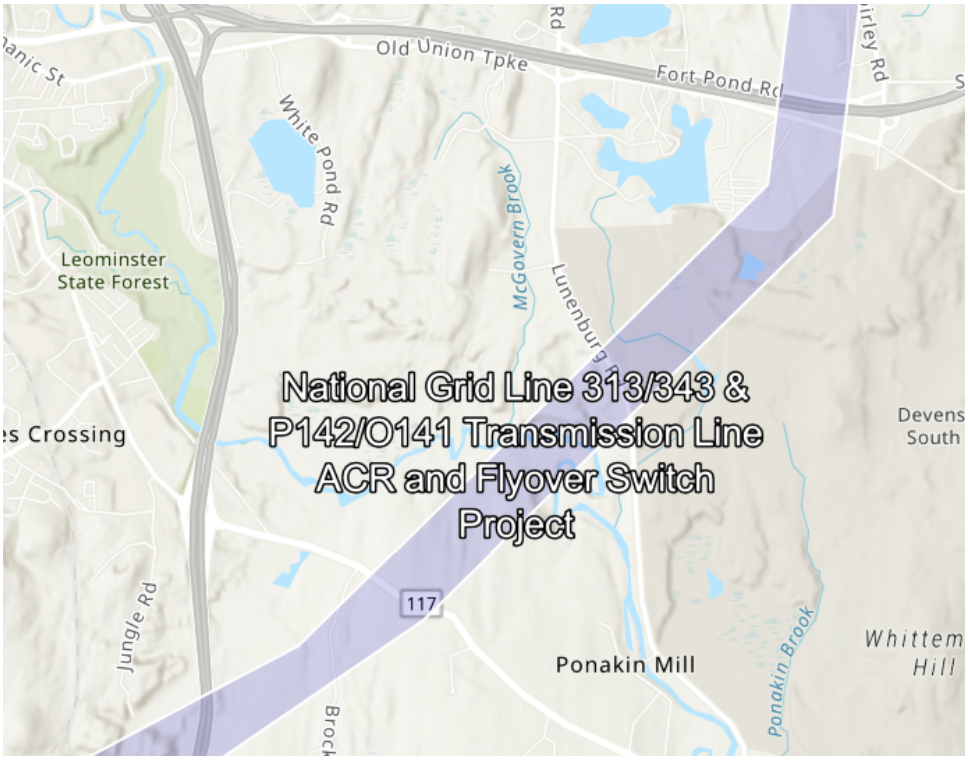
Date Created: 2/21/2023 3:10:32 PM
Created By: imohammadihall
Date Report Generated: 3/15/2023 1:35:47 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey Cahill (erin.whoriskey@nationalgrid.com)

## 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**

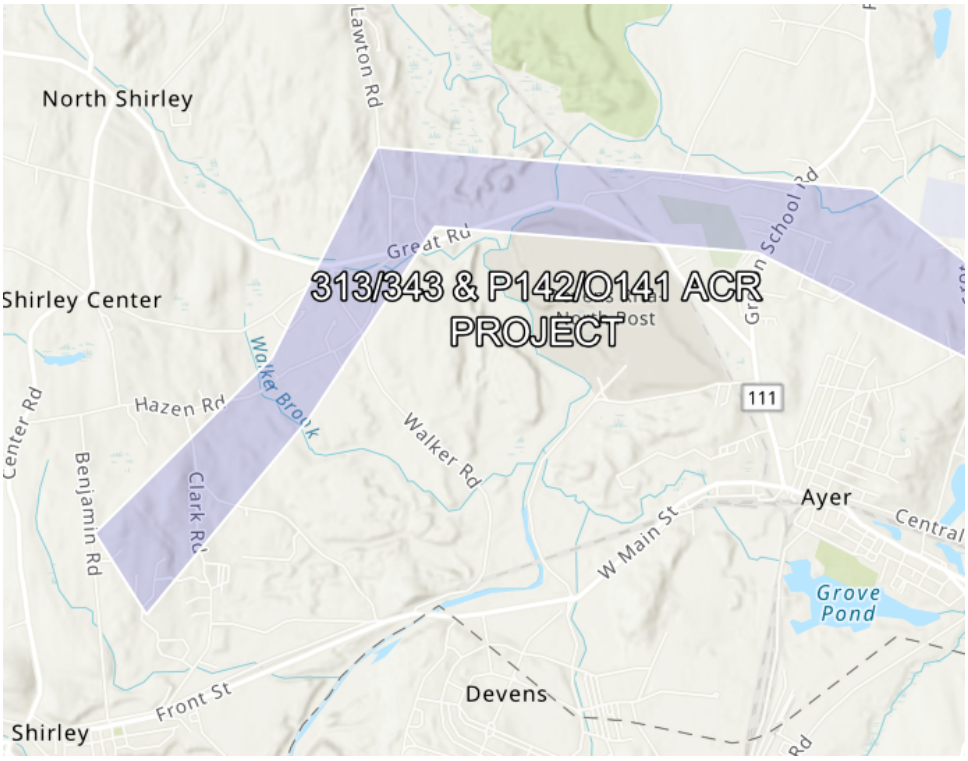
Date Created: 2/22/2023 9:39:08 AM
Created By: imohammadihall
Date Report Generated: 3/28/2023 12:42:08 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey (erin.whoriskey@nationalgrid.com)

## 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**

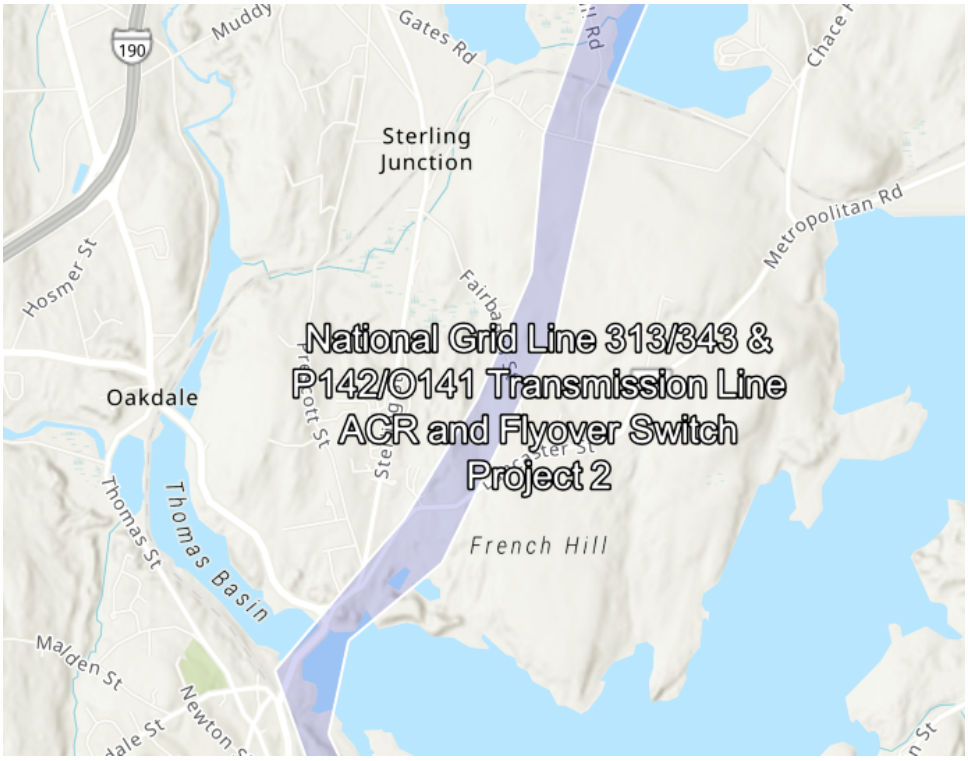
Date Created: 2/22/2023 9:49:40 AM
Created By: imohammadihall
Date Report Generated: 3/28/2023 1:57:07 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey (erin.whoriskey@nationalgrid.com)

## 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**

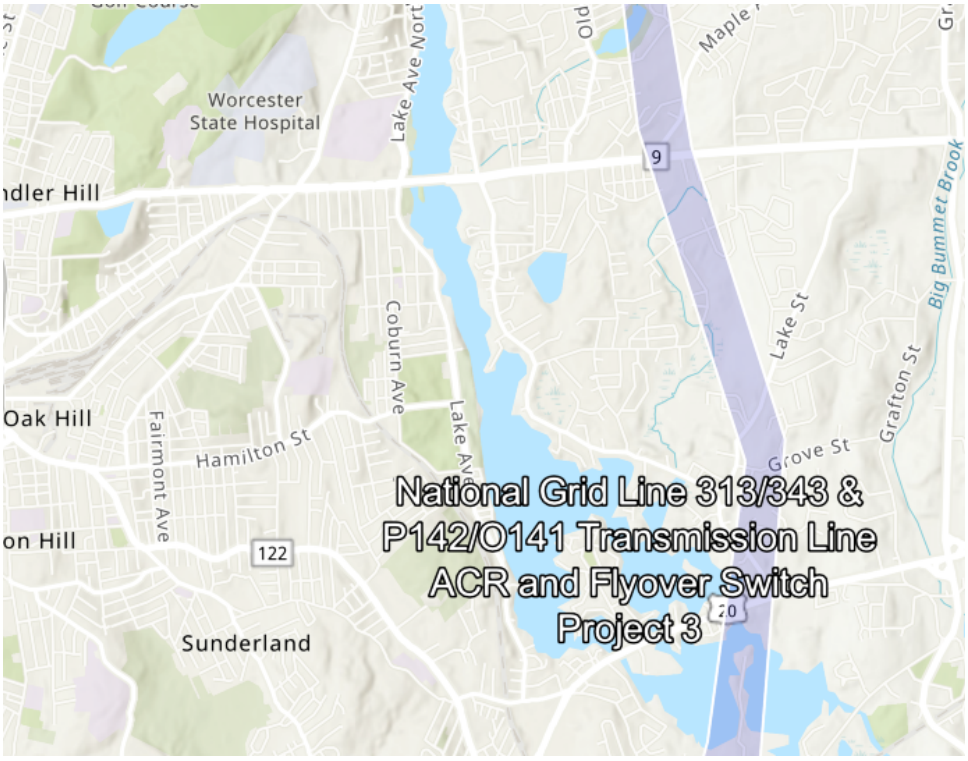
Date Created: 2/22/2023 9:53:13 AM
Created By: imohammadihall
Date Report Generated: 3/28/2023 1:58:41 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey (erin.whoriskey@nationalgrid.com)

## 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**

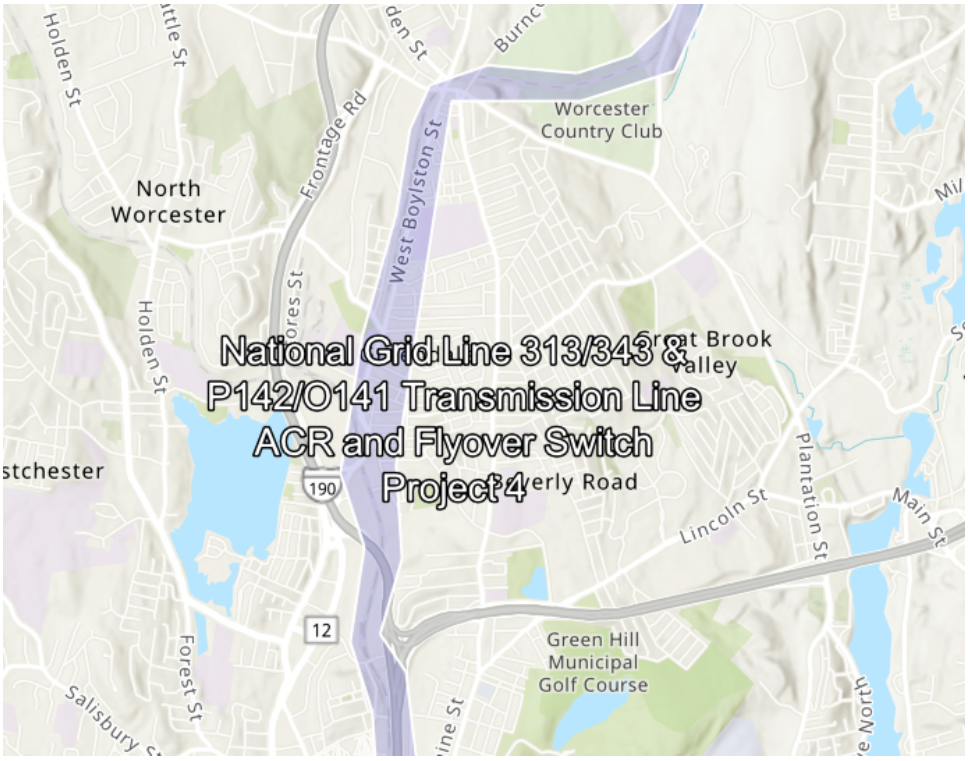
Date Created: 2/22/2023 9:55:58 AM
Created By: imohammadihall
Date Report Generated: 3/28/2023 1:00:04 PM
Tool Version: Version 1.2
Project Contact Information: Erin Whoriskey (erin.whoriskey@nationalgrid.com)

## 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

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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?**
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Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

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**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?**
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**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

# Appendix H: MEPA Distribution List and Legal Notice

| 313/343 & O141/P142 MEPA Distribution List | | |
|---|---|---|
| **Agency** | **Email** | **Physical Address** |
| Massachusetts Environmental Policy Act (MEPA) Office | MEPA@mass.gov | **MEPA Office:**<br>100 Cambridge Street, Suite 900<br>Boston, MA 02144 |
| Department of Environmental Protection, Boston Office | helena.boccadoro@mass.gov | **Commissioner's Office:**<br>One Winter Street<br>Boston, MA 02108 |
| Department of Environmental Protection, Central Regional Office | andrea.briggs@mass.gov | **DEP/Central Regional Office:**<br>Attn: MEPA Coordinator<br>8 New Bond Street<br>Worcester, MA 01606 |
| Massachusetts Department of Transportation - Boston | MassDOTPPDU@dot.state.ma.us | **Public/Private Development Unit:**<br>10 Park Plaza, Suite #4150<br>Boston, MA 02116 |
| Massachusetts Department of Transportation - District Office | jeffrey.r.gomes@dot.state.ma.us | **District #3:**<br>Attn: MEPA Coordinator<br>499 Plantation Parkway<br>Worcester, MA 01605 |
| Masssachusetts Historical Commission | Mail a hard copy of the filing to MHC | **The MA Archives Building:**<br>220 Morrissey Boulevard<br>Boston, MA 02125 |
| Central Massachusetts Regional Planning Commission (CMRPC) | mepafiling@cmrpc.org | **Union Station:**<br>Two Washington Sq, 2nd Floor<br>Worcester, MA 01609-2801 |
| Montachusett Regional Planning Commission (MRPC) | mrpc@mrpc.org | 464 Abbott Avenue<br>Leominster, MA 01453 |
| Energy and Environmental Affairs (EEA) Environmental Justice | MEPA-EJ@mass.gov | **MEPA Office:**<br>Attn: EEA EJ Director<br>100 Cambridge Street, Suite 900<br>Boston, MA 02144 |
| Massachusetts Division of Fisheries & Wildlife | melany.cheeseman@mas.gov<br>emily.holt@mass.gov | **Natural Heritage and Endangered Species Program:**<br>Division of Fisheries & Wildlife<br>1 Rabbit Hill Road<br>Westborough, MA 01581 |
| Massachusetts Department of Conservation and Recreation (DCR) | andy.backman@mass.gov | **DCR:**<br>Attn: MEPA Coordinator<br>251 Causeway St. Suite 600<br>Boston, MA 02114 |
| Department of Agricultrual Resources | barbara.hopson@mass.gov | **Department of Agricultural Resources:**<br>Attn: MEPA Coordinator<br>138 Memorial Ave, Suite 42<br>West Springfield, MA 01089 |
| Department of Energy Resources | paul.ormond@mass.gov<br>brendan.place@mass.gov | **Department of Energy Resources:**<br>Attn: MEPA Coordinator<br>100 Cambridge St, 10th Floor<br>Boston, MA 02114 |
| Massachusetts Water Resource Authority (MWRA) | katherine.ronan@mwra.com | **Massachusetts Water Resource Authority:**<br>Attn: MEPA Coordinator<br>100 First Avenue<br>Charlestown Navy Yard,<br>Boston, MA 02129 |
| **Municipalities** | | |
| **AYER** | | |
| Ayer Select Board | rpontbriand@ayer.ma.us | **Ayer Town Hall:**<br>1 Main Street<br>Ayer, MA 01432 |
| Ayer Planning Board | Planning@Ayer.MA.US | **Ayer Town Hall:**<br>1 Main Street<br>Ayer, MA 01432 |

| | | |
|---|---|---|
| Ayer Conservation Commission | hhampson@ayer.ma.us | **Ayer Town Hall:**<br>1 Main Street<br>Ayer, MA 01432 |
| Ayer Board of Health | bbraley@ayer.ma.us | **Ayer Town Hall:**<br>1 Main Street<br>Ayer, MA 01432 |
| **BOYLSTON** | | |
| Boylston Board of Selectmen | Mmecum@boylston-ma.gov | **Boylston Town Hall:**<br>221 Main Street<br>Boylston, MA 01505 |
| Boylston Planning Board | planning@boylston-ma.gov | **Boylston Town Hall:**<br>221 Main Street<br>Boylston, MA 01505 |
| Boylston Conservation Commission | conservation@boylston-ma.gov | **Boylston Town Hall:**<br>221 Main Street<br>Boylston, MA 01505 |
| Boylston Board of Health | boh@boylston-ma.gov | **Boylston Town Hall:**<br>221 Main Street<br>Boylston, MA 01505 |
| **GRAFTON** | | |
| Grafton Select Board | diffenderfera@grafton-ma.gov | **Grafton Memorial Muni Center:**<br>30 Providence Road<br>Grafton, MA 01519 |
| Grafton Planning Board | coughlanf@grafton-ma.gov | **Grafton Memorial Muni Center:**<br>30 Providence Road<br>Grafton, MA 01519 |
| Grafton Conservation Commission | cameronl@grafton-ma.gov | **Grafton Memorial Muni Center:**<br>30 Providence Road<br>Grafton, MA 01519 |
| Grafton Board of Health | connorsn@grafton-ma.gov | **Grafton Memorial Muni Center:**<br>30 Providence Road<br>Grafton, MA 01519 |
| **LANCASTER** | | |
| Lancaster Select Board | Planning@lancasterma.net | **Prescott Building:**<br>701 Main Street, 2nd Floor<br>Lancaster, MA 01523 |
| Lancaster Planning Board | Planning@lancasterma.net | **Prescott Building:**<br>701 Main Street, Suite 4<br>Lancaster, MA 01523 |
| Lancaster Conservation Commission | Planning@lancasterma.net | **Prescott Building:**<br>701 Main Street, Suite 4<br>Lancaster, MA 01523 |
| Lancaster Board of Health | wbrookings@nashoba.org<br><br>hhampson@lancasterma.net | **Prescott Building:**<br>701 Main Street, Suite 6 Lower Level<br>Lancaster, MA 01523 |
| **MILLBURY** | | |
| Millbury City Council/Board of Selectmen | afleming@townofmillbury.net | 127 Elm Street<br>Milbury, MA 01527 |
| Millbury Planning Board | scollins@townofmillbury.net | 127 Elm Street<br>Milbury, MA 01527 |
| Millbury Conservation Commission | conservation@townofmillbury.net | Millbury Conservation Commission<br>127 Elm Street<br>Milbury, MA 01527 |
| Millbury Board of Health | millburyboh@townofmillbury.net | 127 Elm Street<br>Milbury, MA 01527 |
| **SHIRLEY** | | |
| Shirley Select Board | selectboard@shirley-ma.gov | 7 Keady Way<br>Shirley, MA 01464 |
| Shirley Planning Board | planning@shirley-ma.gov | 7 Keady Way<br>Shirley, MA 01464 |

| | | |
|---|---|---|
| Shirley Conservation Commission | conservation@shirley-ma.gov | Shirley Town Office, 2nd Floor<br>7 Keady Way<br>Shirley, MA 01464 |
| Shirley Board of Health | health@shirley-ma.gov | 7 Keady Way<br>Shirley, MA 01464 |
| **SHREWSBURY** | | |
| Shrewsbury Select Board | selectboard@shrewsburyma.gov | 100 Maple Ave<br>Shrewsbury, MA 01545 |
| Shrewsbury Planning Board | planning@shrewsburyma.gov | 100 Maple Ave<br>Shrewsbury, MA 01545 |
| Shrewsbury Conservation Commission | conservation@shrewsburyma.gov | 100 Maple Ave<br>Shrewsbury, MA 01545 |
| Shrewsbury Board of Health | boardofhealth@shrewsburyma.gov | 100 Maple Ave<br>Shrewsbury, MA 01545 |
| **STERLING** | | |
| Sterling Select Board | bcaldwell@sterling-ma.gov | **Butterick Municipal Building:**<br>1 Park Street<br>Sterling, MA 01564 |
| Sterling Planning Board | swallace@sterling-ma.gov | **Butterick Municipal Building:**<br>1 Park Street, Room 202<br>Sterling, MA 01564 |
| Sterling Conservation Commission | apetrie@sterling-ma.gov | **Butterick Municipal Building:**<br>1 Park Street<br>Sterling, MA 01564 |
| Sterling Board of Health | knickerson@sterling-ma.gov | **Butterick Municipal Building:**<br>1 Park Street<br>Sterling, MA 01564 |
| **WEST BOYLSTON** | | |
| West Boylston Select Board | fzukowski@westboylston-ma.gov | 140 Worcester St<br>West Boylston, MA 01583 |
| West Boylston Planning Board | mrich@westboylston-ma.gov | 140 Worcester St<br>West Boylston, MA 01583 |
| West Boylston Conservation Commission | tgoldstein@westboylston-ma.gov | 140 Worcester St<br>West Boylston, MA 01583 |
| West Boylston Board of Health | mlee@westboylston-ma.gov | 140 Worcester St<br>West Boylston, MA 01583 |
| **WORCESTER** | | |
| Worcester City Council | council@worcesterma.gov | **City Council:**<br>City Hall Room 310<br>455 Main Street<br>Worcester, MA 01608 |
| Worcester Planning Board | planning@worcesterma.gov | **Planning & Regulatory Services:**<br>City Hall Room 404<br>455 Main Street<br>Worcester, MA 01608 |
| Worcester Conservation Commission | planning@worcesterma.gov | **Planning & Regulatory Services:**<br>City Hall Room 404<br>455 Main Street<br>Worcester, MA 01608 |
| Worcester Board of Health | hhs@worcesterma.gov | Health & Human Services:<br>City Hall Room 101<br>455 Main Street<br>Worcester, MA 01608 |

**PUBLIC NOTICE OF ENVIRONMENTAL REVIEW**
**PROJECT:** National Grid Line 313/343/ O141/P142 ACR and Access Road Improvement Project

**LOCATION:** Ayer (01432), Shirley (01464), Lancaster (01523), Sterling (01564), West Boylston (01583), Boylston (01505), Shrewsbury (01545), Worcester (01608), Grafton (01519) and Millbury (01527)

**PROPONENT:** New England Power Company d/b/a National Grid

**The undersigned is submitting an Environmental Notification Form ("ENF") to the Secretary of Energy & Environmental Affairs on or before**: December 15, 2023

**This will initiate review of the above project pursuant to the Massachusetts Environmental Policy Act ("MEPA," M.G.L. c. 30, ss. 61-62L). Copies of the ENF may be obtained from:**
Name: Isabel Mohammadi-Hall
Email Address: imohammadi-hall@trccompanies.com
Phone Number: (201) 306-2297

**Electronic copies of the ENF are also being sent to the Conservation Commission and Planning Board of** Millbury

The Secretary of Energy & Environmental Affairs will publish notice of the ENF in the Environmental Monitor, receive public comments on the project, and then decide if an Environmental Impact Report is required. A site visit and/or remote consultation session on the project may also be scheduled. All persons wishing to comment on the project, or to be notified of a site visit and/or remote consultation session, should email MEPA@mass.gov or the MEPA analyst listed in the Environmental Monitor. Requests for language translation or other accommodations should be directed to the same email address. Mail correspondence should be directed to the Secretary of Energy & Environmental Affairs, 100 Cambridge St., Suite 900, Boston, Massachusetts 02114, Attention: MEPA Office, referencing the above project.

By **New England Power Company d/b/a National Grid**

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**PUBLIC NOTICE OF ENVIRONMENTAL REVIEW**
**PROJECT:** National Grid Line 313/343/ O141/P142 ACR and Access Road Improvement Project

**LOCATION:** Ayer (01432), Shirley (01464), Lancaster (01523), Sterling (01564), West Boylston (01583), Boylston (01505), Shrewsbury (01545), Worcester (01608), Grafton (01519) and Millbury (01527

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Email Address: imohammadi-hall@trccompanies.com
Phone Number: (201) 306-2297

**Electronic copies of the ENF are also being sent to the Conservation Commission and Planning Board of** Shirley and Ayer

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**Electronic copies of the ENF are also being sent to the Conservation Commission and Planning Board of** Shrewsbury

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Phone Number: (201) 306-2297

**Electronic copies of the ENF are also being sent to the Conservation Commission and Planning Board of** Worcester, Sterling, and West Boylston

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